The Veterinary Record.

(Founded by William Hunting, F.R.C.V.S., 1888.)

No. 15. APRIL 13, 1929. Vol. 9.

The Importance of Parasitology in Tropical Lands.*

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The diseases of tropical lands—and this is true for animals as well as man—fall, in general, into two separate classes: those associated with any primitive civilisation and those peculiar to warm climates. The diseases of the first group are mainly bacterial and will disappear (as, say, small-pox and plague, glanders and rabies are disappearing from European countries) as civilisation progresses and hygiene and preventive medicine commence to play their real part in tropical life. The second group—the true tropical group—comprises those diseases caused by animal parasites or conveyed by animal vectors from one host to another. This is only a rough and ready classification, it is true, and it omits many of the minor causes of disease in the tropics—such as the fungi and so on—but it draws attention to the essential differences between tropical and temperate medicine and above all to the importance of the vector and the intermediate host.

Modern tropical medicine commenced only some fifty years ago when Sir Patrick Manson demonstrated the part played by the mosquito in the transmission of human filariasis. It must not be thought, however, that parasitology, or medical zoology as it is now often called, is a new branch of science. Far from it. Indeed, as a cause of disease, the animal parasite was recognised many centuries before Pasteur fathered the modern science of bacteriology.

Archæology is continually unearthing new records of the ravages caused by parasitic worms. Bilharziasis was recognised in Egypt in the times of the early Pharoahs, and the disease is still recognisable in mummies over 3,000 years old. The fertile crescent of Asia Minor teems with references to parasites, and Moses was well acquainted with their effects. The fiery serpents of the wanderings were almost certainly Guinea worms, and the symbolical raising of a brazen serpent on a staff was a practical demonstration of a method of removing these worms which is still practised by the natives of these very districts. The admonitions against the consumption of pork were probably associated with the dangers of infection with trichina worms and tape worms. Other equally old records are sufficiently common to show the antiquity of the subject. Nor is the conception of the intermediate host a new one. The ancient Indian sages ascribed fevers to the bites of mosquitoes. In more modern times, Küchenmeister, 1851, showed that human tapeworms had an intermediate stage in pigs and oxen. Fedtschenko, following advice given to him by Leuckart, discovered the larvæ of the Guinea worm in Cyclops in 1870, and a few years later both Weinland and Thomas found the snail carrier of the liver-fluke of sheep. It is with Sir Patrick Manson, however, that the modern conception of the insect vector of disease first found definite expression, and it is from this time that modern parasitology, and with it modern tropical medicine, became active instruments in the opening up of the hot parts of the world.

Patrick Manson worked in Amoy in China, a district where about 10 per cent. of the inhabitants harboured the parasitic worm called *Filaria bancrofti*, and where a considerable proportion suffered from elephantiasis. This parasite lives in the lymphatic vessels and its larvæ are discharged into the blood stream. They have no normal method of egress from this virtually closed circuit, and Manson, knowing that Nature, callous though she may be of the individual life, always looks after the race, saw that these larvæ must be removed from this closed circuit by some external agent, and he concluded that this agent must be a biting insect. He observed also that these larvæ, or microfilaria as they are called, are almost entirely absent from the peripheral blood stream during the day but are present in very large numbers at night; so he further concluded that this insect vector must be a nightbiting one. A survey of the distribution of the disease and of the available insects led him to experiment with one particular species, and after much patient work he was able in 1878-9 to demonstrate that the microfilaria were abstracted from the blood by a species of culex (either *C. fatigans* or *C. pipiens*) in which an essential developmental cycle took place before they became infective to man again. Manson at that time believed that man was infected by swallowing the larvæ which had escaped from the mosquito into water, and it was not until some years later that Low and others were to demonstrate that the larvæ escaped from the mosquito during the act of sucking blood and actually penetrated the skin.

It is from this date that the importance of the insect vector of disease began to be realised, and that modern parasitology may be said to have begun.

The next chapter in the story comes from the United States. In the last decade of the nineteenth century, a disease was introduced into the Northern States from the South—a disease of cattle which, accompanying the apparently healthy animals from the South, remained to destroy those in the North. That disease, best known perhaps as Texas fever, was one of the first of the major problems set to the recently-constituted Bureau of Animal Industry, and its solution was due to the clear thinking and experimentation of two young men, Smith and Kilborne. After four years of work in the laboratory and the field, they demonstrated conclusively in 1893 that the cause of the disease was a minute pear-shaped animal organism living in the red blood cells; that it was conveyed from cow to cow by means of the cattle tick which

*Address delivered before the Science Club, Trinidad, B.W.I., on the 1st November, 1928. (This paper is being published under a different title, in the April, 1929, issue of *Tropical Agriculture*.)

passed the parasite through the egg, from the infected mother to the infective young. It was a piece of work with far-reaching effect. It brought under control a group of diseases of immense importance to stock breeders all over the tropical world, one of which, incidentally, is present in Trinidad and, but for the watchful supervision of the local veterinary department, would play havoc with the stock. More than that, it helped to point the path to the control of malaria, of sleeping sickness, of yellow fever, and many other diseases of both man and his animals. It is our second milestone on the way to an ideal which is still far distant.

The next few milestones follow fast, however. The story of malaria has been often told; how Laveran in 1880 discovered the parasite; how Manson, remembering his experiments with *Filaria bancrofti*, formulated his famous mosquito hypotheses and how Ross under his inspiration commenced in 1895 that work in India which, first with bird malaria, later with the human form, proved that certain species of mosquitoes were the essential intermediate hosts of the parasites. The difficulties and the disappointments which Ross had to overcome are vividly portrayed in his own recent "Memoirs," and need not be further dealt with here.

In Africa, meantime, the path was being steadily surveyed. David Livingstone, in the very early days of Darkest Africa's exploration, had described Tsetse fly disease in stock, and in 1880 Evans had described the trypanosome parasite of surra, but it was not until 1895, when Ross was setting out to discover the life-history of the malarial parasite, that David Bruce commenced the series of investigations in Africa which culminated first of all in the complete story of nagana and later, after Castellani had found the trypanosome in a patient, that too of human sleeping sickness.

In the New World, too, the work was going on. Findlay, in Cuba, had for some years preached the gospel of Stegomyia, but it was not until 1900, when Reed and Carroll and Lazear and their colleagues came, that the story was substantiated, in part at least—for it is still unsolved. Hindle recently has prepared a vaccine which may hold this scourge in check, but it was on the work of Reed and Lazear that Gorgas was able to clear the atmosphere of the Panama Canal from the dreaded taint of "Yellow Jack." This triumph of engineering science in the tropics is the direct result of one of the greatest triumphs of applied medical science.

Meanwhile, in Egypt, the trail was being blazed by Arthur Looss, a careful and thorough German worker. He had come to teach medical parasitology, and while engaged in this work he commenced a monograph on the human hookworm. While making his drawings one day, a drop of a culture accidentally dropped on his hand. The pricking sensation which resulted was considered as a purely local "itch," until later he found himself heavily infected. Hookworms had entered the body through the unbroken skin. This was a fact of considerable practical importance, not only in hookworm infestations (and it is estimated that about a quarter of the inhabitants of the globe harbour these parasites) but in that other helminth scourge of Egypt, the blood fluke.

In Egypt and throughout Africa generally there live in the blood of man two species of flukes called bilharzia worms. In Japan and parts of China lives a third species, but it is more catholic in its tastes and inhabits the blood stream of a variety of other hosts as well. Until 1912 the life histories of these parasites were quite unknown. It was known, however, that in the case of other flukes an intermediate host—a snail—was necessary, and that in this host a process of asexual multiplication took place. Although many prominent parasitologists tried to find such a host for the Egyptian blood flukes, none had been successful, and Looss, who occupied at that time an almost unique position in the parasitological world, declared that the bilharzial worms were an exception to this general rule and required no intermediate host. The larval forms, he declared, which emerged from the egg penetrated the skin of man, and these developed directly in his liver. A species of cestode in Egypt was known also to develop in man without an intermediary and this, together with the great prestige enjoyed by Looss, caused this hypothesis to be adopted as fact by many workers.

In Japan, meanwhile, in 1908, Fujinami and Nakamura had demonstrated that *S. japonicum* infection in animals followed contact with water in infected neighbourhoods, while in 1913, Miyairi was able to infect experimentally a local snail (described at the time, wrongly, as a Limnæa) although no details of this work were then available. Looss in 1914 accepted this work, but maintained that it did not apply to the African species. Leiper, in London, was unable to agree with Looss, and in 1913 he planned to tackle the problem in a new way. Comparative parasitology suggested that the Egyptian flukes might experimentally infect monkeys. There was no proof that they could, however, and so a negative result would be inconclusive. Moreover, large numbers of monkeys would be necessary to test all the larval flukes found in snails in Egypt.

Now in these larval flukes, there are certain characters which are permanent and appear in the adults, notably in the digestive system. Most flukes have surrounding the first part of the alimentary canal a small muscular pharynx. This is absent in the bilharzia worms. If it were also absent in their larval stages, a valuable morphological clue would be available for its identification. But certain other flukes had this pharynx fused with the oral sucker, although both were separate in the larvæ. Was this the case with the bilharzia worms? Inference was useless to decide this point, and actual observation was necessary. Fujinami's experiments suggested that this observation could be made on the Far Eastern species.

It was not until the spring of 1914, however, that Dr. Leiper and the late Surgeon Atkinson, R.N., set out for China. In the few months available prior to the outbreak of war, they were unsuccessful in finding suitable material in the Yangtze Valley. The war brought field work automatically to an end, and Atkinson rejoined the Navy. Leiper himself journeyed over to Japan to the district where Fujinami had conducted his original investigations; collected the common snails from the endemic fields; and with the aid of a travelling microscope, examined the cercaria. The infective larvæ of the Japanese blood-fluke had no muscular pharynx. Armed with this

morphological clue and a number of parasitised snails, he returned to Shanghai, where a few laboratory bred mice were infected; and so home to London, his immediate object achieved. Meanwhile, of course, Mujairi had, quite independently, discovered the exact rôle played by these same snails in the South Island of Japan.

Accordingly, in 1915, Leiper proceeded to Egypt to search for similar forms. The knowledge that a particular snail was implicated in Japan was of no assistance in Egypt, rather the reverse, as subsequent events showed, because the intermediaries of the African forms proved to belong to an entirely different order of molluscs, as far apart from the Japanese forms as lice are from mosquitoes. The morphological clue alone was of value. By its aid, four different larvæ were isolated. Two of these were discarded for epidemiological and other reasons. The other two were used to infect monkeys and they proved to be the infective stages of the two bilharzial worms which cause bilharziasis of man in Egypt. No experiments were made with any other cercaria.

I have dealt with this milestone in some detail, partly because it has never—even inadequately—been properly described, and partly because, although absent from Trinidad, one species (*S. mansoni*) has been brought over from Africa to the West Indies and tropical South America, and I have been privileged to make a discovery which might have profoundly altered the original investigations, namely, that it occurs naturally in monkeys in the island of St. Kitts, monkeys which originally were imported from Africa many years ago. It is probable that the other African species also (*S. hæmatobium*) which is not present in the New World, will be found naturally in monkeys because Leiper found these animals were easily infected experimentally. This fact, too, has another significance, since a reservoir host such as this makes the possibilities of an eradication campaign more hazardous if, as has been proposed, it is to be carried out by the injection of drugs into carriers of the parasite.

There is not time now, however, to go into these questions of preventive medicine, important as they may be, or to tell how the remaining milestones on our way were erected; how the flea was found to carry plague; the louse, typhus and trench fever; ticks, relapsing fever and other diseases; the cone-nose bug, South American trypanosomiasis, or to describe the variety of biting flies which carry other parasites to man and animals in the tropics. Much ground has been covered since 1879, although the end of the trail is still far in the distance.

These brief epitomes which we have considered show how the opening up of tropical countries depends on parasitology. The great killing and debilitating diseases of the world include syphilis, tuberculosis, malaria and hookworms. The first two are cosmopolitan in their distribution, although the first was probably New World and the second Old World in its origin. The latter are exclusively diseases of warm countries and count their annual victims in millions. When we add to these diseases like yellow fever, plague, sleeping sickness and so on, it seems marvellous that man, especially white man, can live in the tropics at all. In the good old days, in fact, he didn't. The West Coast, for example, became the "White Man's Grave." At the beginning of this century the mortality among white officials there was nearly thirty, and the invaliding rate nearly seventy per 1,000. These figures in twenty years dropped to under ten and under twenty respectively simply through the application of the lessons taught by the parasitologist. The same development of hygiene and medicine is proceeding elsewhere throughout the Tropics, but much has still to be done. Until the hot parts of the world are safe for the white man, civilisation must be retarded. Moreover, the effect of parasites in the coloured workers must be reduced. Malaria and hookworm and other parasitic diseases are less acute, as a rule, in natives, but their effect on working ability and on stamina is enormous. No worker with chronic malaria, with chronic anæmia due to hookworm, with chronic schistosomiasis, or indeed with any chronic infection, can produce to his full capacity. Equally important are the effects on domestic animals. Imported animals quickly die from new infections; witness, for example, the difficulty of introducing stock into Trinidad on account of red water or of taking animals through the Fly Belts in Africa. The native animals all suffer from chronic parasitic diseases, and this causes a steady drain on milk, meat and work production. Without efficient animals, agriculture, the basis of all tropical prosperity and expansion, cannot flourish. In time, maybe, mechanical "horses" may replace live ones, tinned meat and milk and butter replace the real article, and preserved eggs replace the natural product. But that time is not yet, and tractors and tinned food at present only serve to accentuate the need for efficient live stock.

There is obviously much still to be done, although the activity in certain branches of parasitology is greater than ever before. Other pathways are now only just being explored and new tracts being laid down.

But all these researches imply a close co-operation between workers in the laboratory and workers in the field. Without that progress is enormously hampered. The field workers must be able to diagnose infections and pick out the important aspects to be investigated. The laboratory workers then must find out all about the causal organism, its bionomics, the weak points in its armour, and how these may be best attacked. The information then received is applied in turn by the field worker, and another step forward is made. In that way, only, is real progress possible.

Herts' Proud Record.

The results of 24,741 examinations of 6,000 cows under the Hertfordshire Milk Recording Society showed that only twenty-seven cows were found to be tuberculous last year, said Sir Edmund Barnard, presiding at the Society's annual meeting at Hertford. If the rest of England could show a similar health record, he said, there need be no fear of milk as a drink.

Sir Edmund said the total amount of condensed milk imported into this country had risen from 2,177,000 cwt. in 1921 to 2,674,000 cwt. in 1928, an increase of 23 per cent.

Mr. J. Crawford: "I think it is a crying shame that they are allowed to send that milk in without, I believe, any supervision whatever."

XUM

The Law Relating to the Carriage of Livestock by Rail.*

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I have two reasons for the selection of my subject for this address. The first is this. It is just over a year since the new statutory conditions for the conveyance of merchandise (including livestock) under the Railways Act, 1921, came into operation. The subject is, therefore, new—so new that, so far as I can find, no decision on any case arising out of the conditions has yet been reported. In the second place, in branches of veterinary law which are untouched by statute and are regulated solely by common law the rules are to such a large extent mere applications of common sense that an address on such a branch would be rather platitudinous. If, for example, I were to say in regard to the law of hire, "A man who hires a horse is bound to take reasonable care of it," you would at once think, "it would be rather strange if the law were otherwise."

I propose to outline the common law with regard to the carriage of livestock by rail, and then to point out how the common law has been modified by the statutes, the Railway and Canal Traffic Act, 1854, and the Railways Act, 1921, and by the statutory conditions approved under the latter Act. It is desirable to commence by saying something about the common law, because every contract of carriage by rail is regulated by the common law except so far as it is displaced by statute or by special conditions. Further, there is more interest in the discussion of legislation if one bears in mind that the purpose of the legislation is usually either to alter or to codify the common law.

Railway companies are common carriers. A common carrier is one who undertakes for reward, for all who think fit to employ him, such goods as he professes to carry, so long as he has room in his conveyance; that is, his services are on perpetual offer for a certain journey for goods of certain classes, and all that is required to complete the contract is an acceptance. There are contracts of carriage which are not made with common carriers, *e.g.*, the hiring of a motor van for a special journey, and the law applicable in these cases is to some extent different from that applicable where the contract is with a common carrier.

At common law where a contract for carriage of livestock is made with a common carrier, the duties of the owner are to deliver the animals to the carrier at the agreed place, to pay the charges of freight, and to receive the animals at the agreed destination, within a reasonable time of their arrival. Further, he is bound to warn the carrier if any animal is dangerous or if for any other reason it requires special care. The duty of the carrier is to convey the animal to the agreed destination, where he must deliver it in the same condition as he received it. In the absence of any special conditions (a most unusual situation) his only excuses for failure so to deliver are that the loss or injury was due to the act of God, the King's enemies, negligence of the owner, the inability of the animal to stand the journey or some unusual characteristic of the animal which rendered special care necessary, but of which he had not been warned. A horse was being carried by sea, when a storm got up. The horse became frightened, injured itself, and died. It was held that the carrier was not liable. If the storm was of exceptional severity, it was an act of God; if it were not, the horse was unable to stand the ordinary incidents of the voyage. Again, if a bull were sent with an insufficient nose ring, broke away and was injured, the carrier would not be liable because the loss would be due to the fault of the owner.

But the carrier may be prevented from relying on these excuses or on any special conditions if the loss or injury be partly due to the unfitness of the vehicle, unjustifiable delay, or the negligence of the carrier or his servants. Nor can he rely on them if he has deviated from the agreed or customary route unless he can prove that the loss would have occurred even if he had not deviated. If he is to be protected from liability in such cases there must be a definite condition to that effect. Cattle were being carried on a ship subject to this condition ". . . it is hereby expressly agreed that the shipowners are in no way responsible for disease or mortality, and that under no circumstances shall they be held liable for more than £5 for each of the animals." The ship had on her previous voyage carried cattle infected with foot-and-mouth disease, and had not been properly disinfected. The cattle in question having been infected, it was held that the shipping company was liable for their full value. The special condition did not protect it because the loss was due to its failure to provide a ship fit to carry cattle safely.

At first the Courts had some hesitation in applying to railway companies the ordinary rules as to the liability of common carriers, so far at least as related to livestock. In a case in England in 1852 arising out of injuries to a horse received while in transit on a railway, one of the judges observed: "Prior to the establishment of railways the courts were in the habit of construing contracts between individuals and carriers mostly to the disadvantage of the latter. Before railways were in use the articles conveyed were of a very different description from what they are now. Sheep and other live animals are now carried upon railways, and horses which were used to draw vehicles are now themselves the objects of conveyance." He then went on to point out that horses are not conveyed on railways without much risk and danger, and that the rapid motion and the noise of the engine were apt to alarm them and cause them to injure themselves. Therefore, the railway company naturally makes a special contract, and the Court, sympathising with the difficulties of the railway company, construes the conditions of the special contract in favour of the company.

This sympathetic attitude towards the railway companies did not, however, continue. The companies began to refuse to carry goods, and in particular livestock, except upon conditions which exempted them from practically all liability. As they had a monopoly, traders and others were compelled to accept the conditions offered, until, in the language of a judge in a recent case, "Parliament clipped the wings" of the companies by passing the Railway and Canal Traffic Act, 1854.

* Paper presented to the North of Scotland Division, N.V.M.A., at Aberdeen, on 19th January, 1929.

With regard to livestock, that Act provided that, notwithstanding any special conditions, a company should be liable for loss of or injury to horses, cattle, or other animals carried by them occasioned by the neglect or default of the company or its servants. But this exception was made, that the company might make such conditions as were adjudged to be just and reasonable by the Court before which any question relating thereto came to be tried. As might well be expected, a large amount of litigation centred round the interpretation of the words "just and reasonable," but I need now only refer to one test. If a real option was given to the consignor by the offer of an alternative rate and conditions, that was sufficient to establish that the conditions were just and reasonable. Such an option is now always open under the Railways Act, 1921, so that it is difficult to see how any further litigation can ever arise over the interpretation of the words. The other provision of the Act of general importance was the imposition of a limit on the amount recoverable from the company in case of loss or injury. This provision is still of universal application and I shall refer to it in connection with the statutory conditions under the Act of 1921.

The Railways Act, 1921, altered the whole situation. It provided that each group should submit to the Railway Rates Tribunal the terms and conditions (called company's risk conditions) on and subject to which merchandise other than livestock, and livestock, would respectively be carried if carried at ordinary rates, and the terms and conditions (called owner's risk conditions) for carriage at owner's risk rates. After hearing parties interested the Tribunal was to settle the conditions, and when settled the conditions are deemed to be just and reasonable. All this has been carried out, and since 1st January, 1928, the rule is this: Apart from special contract, merchandise (including livestock) is carried on company's risk conditions. But where an owner's risk rate is in operation and the company is requested in writing to carry at that rate, owner's risk conditions apply. Thirdly a company and a trader may subject to the Act of 1854 agree to any terms and conditions they think fit, and, as I observed before, it will not now be possible to set aside any such contract on the ground that it is not just and reasonable, because the trader always has open to him the alternatives of company's or owner's risk conditions, both of which are deemed to be just and reasonable.

Three of the sets of conditions apply to the carriage of livestock, conditions C to carriage by merchandise train on company's risk conditions, conditions D to carriage by merchandise train on owner's risk conditions, and conditions N to carriage by passenger train. I propose to draw your attention to certain of the Company's risk conditions, and then to the one important point in which owner's risk conditions differ from them.

There are twenty-three company's risk conditions covering seven pages of a fair-sized volume, so it is impossible to do more than refer briefly to a few of them.

Under Condition 1 all livestock must be consigned on the Company's form of consignment note.

Condition 2 deals with the position of a person in charge of a consignment of livestock and travelling with it. This person must sign a declaration that he relieves the Company from all liability to himself or to his representatives for loss of life, personal injury, or delay, and for loss of or damage or delay to his property however caused. At common law a carrier's duty is to exercise due care in carrying a passenger, and he is liable for loss due to negligence. The effect of this condition is that even if the injury be due to the negligence of the Company there is no liability.

Condition 3 is in two parts differently expressed. First the company is not liable for injury to a consignment or any part thereof except upon proof by the trader that the same was caused in transit by the neglect or default of the company or their servants. This is a great alteration in the common law, though the condition is very similar to the type of special condition by which the companies previously protected themselves. Instead of the burden being on the company of proving that the injury was due to an act of God or some other cause for which they were not responsible, the trader must now prove specific fault.

Let me illustrate from a reported case the legal view of the duties of companies in carrying livestock, and the method of proving that a company has failed in these duties and, therefore, been guilty of negligence. A mare was entrained at Wemyss Bay for Denny in a horse box without an attendant. Under the contract of carriage the company was liable only for loss due to the negligence of its servants. When the train reached Paisley it was discovered that the mare had struggled through the feeding window into the next compartment which was intended for an attendant, and had been injured. In an action by the owner against the company it was contended that the company was in fault in three respects: first, that the feeding window was too large; second, that the catch securing it was not sufficiently strong; and third, that the halter was too long. This illustrates the first point with regard to claims on the ground of negligence. It is useless to charge the company merely with negligence, it must be stated specifically wherein the negligence consisted. The Court considered first what was the duty of the company, for since negligence consists of a breach of duty, it is impossible to tell whether there has been negligence until the duty is defined. The company then is "required to take all reasonable precaution for the security of the goods they carry which do not require from them any unusual expenditure, and the providing of which does not require any unusual sagacity or foresight." Applying this test to the three grounds of alleged fault the question was whether any of them disclosed a breach of duty. The feeding window was twenty-five inches square, and this was alleged to be too large. It was proved, however, that twenty-five inches square was a usual size. It was also proved that the construction of the window and catch was similar to that used on other railways. With regard to the length of the halter, the Court reached the conclusion that a shorter halter might have been dangerous in making the mare uneasy; and with regard to all three grounds of fault, the Court laid great stress on the unprecedented nature of the occurrence, as one which the company was not bound to foresee and provide against. The Company was held not liable.

The second part of Condition 3 provides that the company shall not be liable for loss of or from a consignment proved

by the trader to have been occasioned in transit, or from deviation, misdelivery, delay or detention, upon proof by the company that such loss, deviation, misdelivery, delay or detention was not occasioned by the neglect or default of the company or their servants. This is a very confused statement because the company is not liable, *e.g.*, for delay, but only for loss due to delay. The true effect of deviation I have already dealt with. Without going into detail in regard to the difficulties of this part of Condition 3 and of its relation with the first part, this much is clear, that when there is a loss of or from a consignment in transit the burden of proof is thrown upon the company to shew that it was not due to their fault. This involves two things, first, proof of the cause of the loss, and second, proof that that cause operated without fault of the company.

Under Condition 4 the liability of the company for loss is limited. A rather strange state of affairs has arisen in this connection. As I pointed out earlier, the Act of 1854 limited the amount recoverable. That provision is still in force and, as amended by the 1921 Act, limits liability as follows: for any horse, £100; for any meat cattle, per head, £50; for any other animal, £5; unless the value is declared and an excess fare paid. Condition 4 is inconsistent with this provision of the Act. It limits liability as follows: for a horse, £100; for any meat cattle, £50 per head; for any sheep, ass, mule, or pig, £5; for any dog, deer or goat, £2; for any rabbit or other small quadruped, 7/6; for any head of poultry or other bird, 7/6. There is no definition of "animal" in either Act, and it may be that the tribunal was entitled to impose the limit of 7/6 as regards poultry, but it is very doubtful whether it will be held that it had the power to settle the maximum liability for, *e.g.*, a dog at £2, when the Legislation had definitely fixed it at £5.

Condition 7 limits the time for making claims. Under it the company is not liable for loss from or injury to a consignment unless notice is given within three days of the ending of the transit and a claim made within ten days. It is not liable for the loss of a whole consignment unless notice be given within fourteen days after receipt of the consignment by the company and a claim made within twenty-eight days. But the Railway Rates Tribunal have power in suitable circumstances to declare that these limits shall not apply to a particular case.

These are some, and, I think, the most important of the "company's risk conditions." I wish in conclusion to draw your attention to the main difference between "company's risk conditions" and "owner's risk conditions." It is this. Under Condition 3 of the "owner's risk conditions" which corresponds with Condition 3 of the other set, the company is not liable for loss of or from a consignment or for injury, deviation, etc., except upon proof by the trader that the same was occasioned in transit by the wilful misconduct of the company or their servants. There is some doubt as to what is the exact meaning of the phrase "wilful misconduct." Sometimes the question has been put thus: Was the conduct wilful? If it was, was it misconduct, a thing which ought not to have been done? If so, there was wilful misconduct. On this view, action taken from the best motives, but actually mistaken, if intentional, is wilful misconduct. Another view is that there is no wilful misconduct unless the person actually intended to do wrong. In this sense pilfering is wilful misconduct, but carelessness, however gross, is not. A third view is that wilful misconduct merely means gross negligence. In any event the burden on the trader is bound to be a heavy one, for he has first to find out the cause of the loss (and the company is not bound to tell him) and then to establish that there was either deliberate fault or at least gross carelessness.

Discussion.

Most of the members raised interesting points on the paper delivered by Mr. Walker.

Mr. W. Hepburn enquired as to the liability for loss of cows, at the drop of calving, which had been carried in railway wagons. He pointed out that whilst railway companies have a condition of transit—no cow within six weeks of calving will be accepted—yet, they do regularly accept cows which calve—sometimes in transit, or at any rate very soon after arrival at the place of destination. Mr. Hepburn also instanced two or three cases of injury to horses in transit, similar to the one instanced by Mr. Walker, where the horse got partly through the window of the horse box.

Mr. W. J. Rice gave it as his opinion that the reason why injury to an animal in transit had to be proved by the owner, whilst the onus of proof for loss in or of a consignment rested with the railway company, was that, in the first case, the contract had been completed by the railway company whilst, in the other, the contract had not been completed.

Mr. D. Clerk raised the point as to the liability for loss as it occurred in the case of two cows which the owner had contracted with the railway company to be carried in a horse box, but which the railway company consigned in an ordinary cattle truck. He asked Mr. Walker whether the railway company in that case would be liable for the loss.

Mr. W. Macpherson raised the question as to who was responsible for the payment of fees to veterinary surgeons who were called by a station master to attend injured animals. He confessed that on one occasion he had been put off by the phrase "whomsoever it may concern," but asked Mr. Walker to clear up the point if possible.

The President (Mr. R. E. Drennan) was of opinion that Mr. Walker had given very sound advice when he said that the best thing a veterinary surgeon could recommend his client to do in any case which was likely to lead to legal proceedings was first of all to consult a lawyer.

Mr. Walker replied briefly to the questions raised, and in reference to Mr. Hepburn's remarks, said that, under the Transit of Animals Order, of course, it was an offence to carry a cow which was about to calve, in a railway wagon, and that in his opinion the consignor would be committing an offence under the Order, apart altogether from the question of civil action.

Mr. Walker was very interested in Mr. Rice's suggestion, and said he would give the matter fuller consideration. He thought that in the case of the losses instanced by Mr. Clerk the railway company would, undoubtedly, be liable for a direct breach of contract.

Mr. Walker thought that whoever called the veterinary surgeon to attend a sick animal would be liable for the fee. He pointed out that if a station master did not call on a veterinary surgeon to attend a sick animal, the railway company would be responsible for any further loss or depreciation that might result on account of the veterinary surgeon not having been called. He was, therefore, of opinion that the railway company, in the cases instanced by Mr. Macpherson, would be liable for the fees.

As a result of Colonel Dunlop Young's suggestion that Australia should breed a hornless type of cattle that would give a smaller and earlier maturing carcase than those at present being exported to Great Britain, the New South Wales Minister of Agriculture, Mr. H. V. C. Thorby, recently made arrangements to import some of the best polled Angus cattle procurable.—*British Australian.*

Hyperæmia Produced by Subcutaneous Injections of Tincture of Iodine as Treatment of Severe Wounds.*

By Dr. LAGAILLARDE,
Captain, Veterinary Corps, French Army.

Injuries that penetrate the skin and underlying tissues permit the virulent attack to pass the first line of defence. The second line of defence—the white blood corpuscles and the bactericidal effects of the body fluids—is therefore called upon. These forces are brought into action by the developing inflammation and ensuing vaso-motor dilation, which brings up cellular as well as humoral defensive forces to resist the aggressive invaders. The phenomena of vaso-dilation, which are fundamental causes of all leukocytic action, are, according to S.Arloing, Bonchard, Charrin, caused by toxins. This explains why reaction to any injury is not immediate, but requires time to develop. Often the intensity of inflammation is too weak and does not bring forth defensive forces strong enough to defeat the invaders, or to localise the damage.

From a therapeutic viewpoint, it would therefore be of advantage to produce, in case of a severe wound, that may be followed by serious consequences (complications), almost immediately, a violent inflammation. The phagocytes, appearing in immense numbers, will have to combat a relatively small number of invaders, which have not had time to develop their means of attack and defence—the toxins. Even after the disease process is established there is still need, in order to increase resistance, for a great number of phagocytes as well as tissue fluids.

We produce an active, rapid, violet hyperæmia by means of four or five subcutaneous injections, each of 1.5 cc., of diluted tincture of iodine at several points surrounding the wound. They are made at a distance of 6 to 8 cm. (2½-3 inches) from the injury.

A marked œdema develops rapidly all around the wound; it disappears between the 7th and 10th day. On account of the antiseptic properties of the diluted tincture of iodine it is not necessary to sterilise the syringe or to disinfect the skin.

We have used the pure tincture of iodine doses of 1 cc. for each injection. This caused a few benign abscesses, due to the necrotic action of the iodine. We therefore prefer to use tincture of iodine that has been diluted with an equal amount of water. Each injection consists of 1.5 cc. of this dilution.

Numerous cases which we have treated by active hyperæmia produced by this method permit us to draw the following conclusions:—

In cases of open wounds, the consequence of which may be grave, especially those in the regions of the articulation and tendons so often found in horses (horses in the army) it proves to be a useful, economical, effective therapeutic procedure. As a rule, the wound receives no other treatment; if it is aufractous, sinuous or extensive, the usual therapeutic remedies as well as surgical means should be applied besides the active hyperæmic treatment.

REPORTS OF ESPECIALLY SERIOUS CASES.

Case No. 1.—Penetrating wound on the inner aspect of the hock. Articulation open, synovial discharge; patient kicked five hours previously. Received four subcutaneous injections of tincture of iodine around the wound. On the following day marked œdematous swelling on inside of leg and region of cannon. Healed in about ten days.

Case No. 2.—Voltigeur (name of horse). Examined September 25th. Kicked on outside of fetlock, posterior extremity; injured previous evening. Scarcely any weight carried by leg. Received four injections of 1 cc. each of tincture of iodine, at points surrounding the injury, about 5 cm. from it. On the next day extensive swelling,† surrounding the fetlock, the cannonbone and the phalanges. On the 28th lameness almost nil, swelling persists, cicatrisation of the wound has progressed nicely. October 3rd, œdema has entirely disappeared, healed.

Case No. 3.—Marbot, five years old. On September 30th, the saddle slipped under the belly. The horse threw itself on the pavement, receiving on the front of the right knee a large and deep laceration. The ligaments were torn, the articulation open. A grave injury; suppurating arthritis would probably prove fatal (under ordinary treatment). Immediately after the accident we made, surrounding the lesion, five injections of 1.3 cc. of tincture of iodine. Applied tincture of iodine and powdered permanganate of potassium to the wound. In an hour, the œdema was marked; serous discharge from the injury. During the following days, extensive swelling in the region of the knee prevented flexion; carried weight almost normally; slight suppuration from the wound.

December 5, 1927.—Swelling persists, the wound is granulating; from the centre the necrotic tendinous parts begin to separate. We make two injections of tincture of iodine of 1.5 cc. each, on the sides of the knee, a little below the lesion.

December 9th.—The wound is granulating, the necrotic parts in the centre continue to disintegrate; the swelling persists, preventing flexion; support is normal.

December 16th.—Two small abscesses near the place where the injections were made, appear.

December 20th.—The wound is flat (plate), swelling reduced, but still noticeable. January 10th.—The knee appears normal except over the region of the rear, under which an exostosis is formed. The horse went to work.

[The translation contains other case reports, all illustrating the beneficial effects of the procedure described.—Ed. *V.R.*]

* Translation from *Revue Vétérinaire et Journal de Médicine Vétérinaire*, Vol. LXXX., October, 1928, pages 544-547, by C. H. Schultz, in *Chicago Veterinary Medicine*, January, 1929.

† The author uses "œdema" to designate swelling caused by subcutaneous injections of tincture of iodine. Since the swelling is of an inflammatory type, I have translated it as "swelling." Œdema is non inflammatory.—C. H. S.

PERSONAL.

An alarming experience befel Professor J. Douglas Stewart, B.V. Sc., M.R.C.V.S., of the University of Sydney, who with his wife and daughter are visiting this country, when a taxicab in which they were riding in Grosvenor Square, London, was badly damaged in violent collision with another vehicle on March 17th. Professor Stewart escaped with a severe shaking, but both Mrs. Stewart and Miss Stewart was badly cut and bruised. They have now sufficiently recovered to be able to accompany Professor Stewart on a visit to the Continent, where the Professor will proceed to some of the leading veterinary schools to enquire into recent advances in veterinary education and research. Professor Stewart hopes to return to England about May 10th.

XUM

The London Van Horse Parade.

The "coming of age" or twenty-first annual Parade of London's van horses was held in Regent's Park on Easter Monday, the 1st April, and as usual attracted a large number of people. The primary objects of the parade are the improvement of the general conditions and treatment of van and light draught horses, and the encouragement of a spirit of kind and intelligent interest in their well-being by those in whose charge they are placed. The part played by the London Van Horse Parade Society, the Patron of which is His Majesty The King, the President The Earl of Lonsdale, the Chairman Lord Daresbury, and the Secretary Mr. R. A. Brown, is worthy of all praise in this respect. A sum of £650 in prize money, prize cards and rosettes was this year offered, making a total of £6,472 awarded since the inauguration of the Society. The turnouts exhibited are largely drawn from general carriers, dairymen, greengrocers, bakers, railway companies, laundries and large London stores, and the Society's special wish is to encourage the small owner, of whom in this year's parade there were 64. The term "vanner" is intentionally elastic, but an indispensable factor is that the animal must be able to trot.

The total number of turnouts paraded was 610, comprising 521 single horse vans, 83 pair horse vans and 6 barge horses shown in their working gear. First-class prizes were awarded to 568 and 34 were given second-class prizes. Only two horses were rejected as unfit by the Veterinary Inspectors. For single horse vans and large horses a first-class award is 15s. and a second-class award is 7s. 6d., while for pair horse vans the awards are £1 and 10s. respectively for first and second classes. Added to this the R.S.P.C.A. awards a brass merit badge to all first-class awards. The quality of the turnouts on the whole was excellent, and sp ke very highly for the care and attention bestowed on horse, vehicle and harness alike. With very few exceptions they were all deserving of first-class awards; it would be impossible to equal the display of business horse management in any other country of the world.

The parade entails a vast amount of work, first on the part of the Secretary in the detail of arrangements, approaching various firms and individuals in regard to entries, and subsequently in getting out the Annual Report. Then, on the day of the parade, the work of the Veterinary Inspectors, th· Judges and the Stewards is very hard, as necessarily everything has to be done quickly. Of the Veterinary Inspectors (Messrs. C. Cunningham, W. J. Hatton, J. McCunn, E. Alfred West, J. Willett and G. H. Williams) the majority have given their services for many years, and the same may be said of the Judges (Lord Daresbury, General Sir Edward Bethune, Sir George Hastings, Major-General Geoffrey White, Lieut.-Col. P. Laurie, Major Toms, Major Faudel Phillips, Messrs. J. Ellis, Claud F. Goddard, P. H. Hughes, Major Gore L mbarde, Lieut.-Col. J. L. French, Messrs. E. Hensley, F. J. Rawle and R. S. Tilling). Mr. Tilling was one of the original Judges in the first parade in 1904.

London's appreciation of the parade was specially shown by the attendance in state of the Lord Mayor, the Lady Mayoress and the two Sheriffs, a ·d the by no means light duty of presenting the merit badges was performed by the Lord Mayor. On the conclusion of the parade a luncheon was given to those who had lent their services in making it a success. Speeches were in felicitous terms and indicated that, in spite of the advance of mechanisation, the horse in commercial life continues to hold his own and particularly where comparative costs of horse *versus* motor are concerned. J. M.

Wool Industry Research.

In the course of his recently-published report on the work of the British Research Association for the Woollen and Worsted Industries, Dr. S. G. Barker, Director of Research to the Association, states:—

"In any systematic study of the wool industry, first of all one would have to pay attention to the properties and production of the raw material from which the finished products of manufacture are to be derived. In the case of wool, from the scientific point of view there is very little definite knowledge to place before the manufacturer or grower. In fact, it can be said that from the scientific point of view we know just enough about wool to realise how little we know.

"Every step taken in the investigation of the properties of the fibre only convinces the investigator of the large amount of work yet to be done and of the wonderful material upon which he is working. One point is of special interest; namely, the inherent variability of wool as regards its pr·perties. It would seem, therefore, that work on the raw material should be directed towards the analysis, identification, measurement, etc., of the various attributes of the wool fibre and subsequently to the clear ascertainment of the relative importance of each of these characteristics in the industrial processes. The question of the modification of the properties of wool to suit particular conditions, as well as the means of effecting such modifications, must be determined. The effects of selection, breeding, nutrition, climate, pasturage, etc., on particular breeds of sheep, and consequent effects upon the wool produced on their backs, must be observed carefully and expressed in such a manner that the producer will have definite data upon which to base his future work in the production of improved wool for the manufacturing side of the industry.

"The supply of good raw material to the manufacturer in such a form as to render the subsequent handling capable of being effected in the most economical manner is undoubtedly the producer's ideal as being of the greatest economic importance to him, but, in the past, he has been largely handicapped by lack of accurate knowledge of the attributes in the fibre required by the manufacturer, and also in the best method of assessing the value of the characteristics of his product. In other words, there has been no clear, definite interpretation of the meaning of "quality" of wool as understood for manufacturing processes. In the case of other textile fibres of a synthetic and artificial character, the success of these industries is largely due to the fact that the raw material is prepared under scientific supervision and on scientific principles, and is therefore of standard quality and characteristics, produced with a view to its subsequent use in manufacturing processes.

"In the case of wool, the raw material has been produced very largely without reference to its subsequent use, and in consequence uneconomic factors have crept in which render the industry under a permanent disability in competing with artificial fibres. It is obvious, therefore, that a close connection should exist between manufacturer and producer of the raw materials, and secondly that this close connection should be founded on a basis of scientific fact which is irrefutable.

Work of Biological Department.

"The needs of the manufacturer are to a large extent well known to him from practical experience, but at the

same time he finds it exceedingly difficult to express these needs in precise terms. Until a close scientific examination has been completed of the various attributes of the wool fibre, and the influence of its characteristics carefully assessed as to their relative value in the various processes carried out throughout the industry, it will be exceedingly difficult for such expression to be made intelligible to the wool producer in terms of precision. The Research Association, therefore, by the creation of a Biological Department, has inaugurated systematic study of the attributes of the wool fibre, with a view to the determination of the causes of the actions and reactions of its various characteristics during the manufacturing processes. Parallel with this work the Biological Department is carrying out intensive and extensive research on the production of wool, which entails a close study of those biological factors which might influence in any way the character of the wool itself, as it grows on the sheep's back. Naturally, this involves a study of inheritance of particular features, fleece analysis, rate of growth, density, environment, nutrition, climate, etc., together with an analysis of the effects of pasturage of different kinds on wool production.

"It has to be remembered in this work that wool is not the only product of the sheep, and close attention has to be given to the mutton-producing qualities of the animal, as well as to the wool side. Physiological characteristics of the sheep are being investigated in co-operation with other bodies, such as the Animal Breeding Research Department of Edinburgh University, and the Rowett Institute, Aberdeen. The scheme of wool research is therefore of a very wide and comprehensive character, otherwise little progress can be made, since in all matters the economic factor must be considered. . . . .

"The task before us is enormous, and any system of wool research that is to be developed must be Imperial in character. The value of wool to the home country as a raw material and to the Empire as an agricultural product is very great, and it is essential that if the pre-eminence of the woollen and worsted industries in the economic structure of the Empire is to be maintained, there should be closer contact between producer and user, with a unified aim: namely, to co-operate in the production of a final article, which, throughout its whole treatment, from the mating of the parent sheep to the finishing of the fabric, shall have been manipulated on the most scientific lines."

Time for Hanging Meat.

Results of Experiments.

Experiments are being carried out by the Food Investigation Board as to what effect the time allowed for hanging meat has on its condition.

The results obtained so far point to the following conclusions:—

(1) There is in general a progressive increase in the tenderness of all joints hung at 41 deg. Fahr. (the temperature so far investigated).

(2) The increase is less marked with the best quality meat—*e.g.*, loin from prime animals.

(3) There are indications that certain coarse joints, and, in any case, inferior quality carcasses as a whole—*e.g.*, aged cow beef—are greatly improved by hanging.

(4) After 17 days' hanging at 41 deg. Fahr. the meat is still perfectly sweet.

The live stock quarantine station at the East India Docks has now been in existence for twelve months, and during this period 543 animals have passed through for shipment to the Union of South Africa, Northern and Southern Rhodesia, and the Irish Free State.

At the annual meeting of the British Friesian Cattle Society, it was decided to hold an annual sale of high-class bulls, and that the conditions of entry should include inspection, passing the tuberculin test, and minimum qualifications for milk yield and butter-fat percentage.

The Veterinary Record.

13th April, 1929.

FESTSKRIFT TIL BERNHARD BANG. 1848—JUNI—1928.

The title of our editorial this week calls attention to a noteworthy event in the history of veterinary science, *viz.*, the eightieth anniversary of the birthday of the well-known pathologist, Professor Bernhard Bang, of Copenhagen. In order to commemorate this occasion the Royal Veterinary and Agricultural College of Denmark has issued an important volume containing a series of articles on veterinary subjects by Danish authors. The volume is also dignified by an admirable frontispiece portrait of Professor Bang, followed by a list of no fewer than 129 articles contributed by him to various scientific journals between 1874 and 1928.

Bang is chiefly known as a pioneer worker on the subject of contagious bovine abortion, the causal organism of which, in company with Stribolt, he was the first to recognise in 1896. Some members of the National Veterinary Association will recall the address on this subject which he delivered at their meeting in Liverpool in 1906. The method of tuberculosis eradication which bears his name was based on sound reasoning and has been widely practised. Other animal diseases which from time to time have enagaged his attention include actinomycosis, mastitis and Johne's disease in cattle, as well as certain diseases of swine. In recognition of his eminence in the realm of veterinary science he was elected as long ago as 1901 an Honorary Associate of the Royal College of Veterinary Surgeons.

In offering Professor Bang our hearty congratulations on attaining his eightieth year, we would express the hope that during an honourable retirement good health may continue to be his lot.

A table recently compiled by the American Bureau of Agricultural Economics shows that among the leading nations of the world the amount of meat consumed per individual has increased steadily in recent years. An interesting point confirms the preferences in meat of British people compared with those of other countries. Much more mutton and lamb is eaten in Britain, while in America, Canada and Germany pork forms fully half of the meat dietary.

XUM

CLINICAL AND CASE REPORTS.

Dislocation of the Hip.

By P. A. M'Corry, M.R.C.V.S., Ballyconnell, Co. Cavan.

Some time ago I read with much interest in this journal an article by Mr. McIntyre of Leek, on the subject of so-called "uncoupled cows," and think it worth while recording the following recent case.

The accident occurred to a heifer, during service by a rather heavy bull, the animal falling in the act and displacing the right joint. I saw her about four hours after, the owner informing me that she was able to get back to the shed (about 100 yards away) on three legs. He remarked that the foot was carried away from the body, no weight being borne.

When I found her she was lying down and would make no attempt to get up. However, after creating some excitement around her, and with some assistance behind, she did get on her legs.

On examination by manipulation and by applying the ear directly over the seat of injury, I was satisfied, by movements and sound, that there was a backward dislocation.

Reduction.—The shank was grasped with the right hand, and the hock firmly flexed, the lower limb being carried forward and well under the body, bringing the head of the femur well under the other hand. By sharply drawing the leg backwards and outwards, at the same time pressing home with the left hand, it went back with the "crack" which pleases the operator and, more particularly, the owner.

When replacement was effected the animal seemed to bear her usual weight, and in a few seconds moved off voluntarily with not much stiffness. Further treatment was not considered necessary, more than to restrict movements indoors for a few days, and when appearing to use the leg n a manner approaching the normal, and danger of recurrence was past, to give her her freedom as before. I did not visit again, and she is now reported sound.

Remarks.—It is important that such cases should be attended early; of course, this rests with the owner. We all know how difficult it is to get cattle on their feet, once they have settled on the ground through any cause. In the first place, I have not found it so satisfactory to manipulate whilst the patient is lying down, as an aid in making, as nearly as possible, a correct diagnosis.

From time to time I have seen many cases of injury to this joint in cattle, these frequently happening when there is an unnoticed member of a herd in œstrum. It occurs in wheeling, when she is mounted and the animal may fall or half-fall.

The damage varies from overstretching of the ligaments, and tearing of muscular attachments, to dislocation or fracture of the neck of the femur, or possibly both.

In the less serious injuries, the period of repair takes from six weeks to three months. Probably a dislocation, if replaced in time, is the more favourable. In fracture of the neck, I am satisfied that recovery does not take place, the case usually going from bad to worse.

In regard to dislocation of the shoulder, on looking back I cannot recall that I have ever been satisfied that I have met a case in the larger animals.

The Subpalpebral Tuberculin Test.

By R. H. Smythe, M.R.C.V.S., Camborne.

Since the introduction of this test two years ago, it has become increasingly apparent from the amount of correspondence received, both from at home and abroad, that the technique has been imperfectly understood in many cases.

The chief reason for this has been the fact that many practitioners have been in the habit of using the word "intrapalpebral" in referring to the test and hence those who have had army experience of mallein testing have concluded that the same methods held good in each instance.

In the *subpalpebral* test, the tuberculin is not injected into the lower eyelid but *subcutaneously*, through the skin, *below* the lower eyelid and between this structure and the bony rim of the orbit. The point of the needle thus enters the soft tissues immediately beneath the eyeball.

The animal should be held by a "bulldog" inserted in the nostrils and the head pulled round towards the right shoulder. The left hand of the operator should then be placed over the animal's left eye, with the tip of the second finger pressed firmly into the space between the lower edge of the eyelid and the orbital rim. Using the finger tip as a guide, the needle of the syringe is inserted *through* and at right angles to the skin for a distance of half an inch and the dose injected.

A dental type syringe with glass barrel and fine interchangeable needles, which project half an inch beyond the butt, answers the purpose admirably.

The reaction takes the form of a swelling, ranging from mere skin thickening to an enlargement the size of a duck's egg. It attains its maximum at about the forty-eighth hour and gradually subsides, usually disappearing about the fourth or fifth day after injection.

Although contrary to our original belief, it is advisable to repeat the injection if no reaction is visible at the forty-eighth hour, for whilst in the majority of cases where tubercle exists a second injection is rarely needed, we have lately obtained reactions in several cases by this means, when none had resulted from the first dose.

Concentrated tuberculin is employed, as for the intradermal test. The amount required for the initial dose is 4 minims, whilst for the second dose 6-10 minims may be injected. Experimentally, we have found that no sign of swelling follows the subpapebral administration of quantities up to one drachm, in healthy cattle.

The technique, once understood, is simple and the operation is carried out much more rapidly than in the case of the intradermal test. There is never any doubt as to the location of the tuberculin and there are no subsequent "doubtful" reactors. The soft structures at the base of the eye appear far more responsive than skin tissue, and whilst pain and tenderness are not so marked, the degree of resultant swelling is much greater than by the intradermal method. In the mildest reaction, the thickening of the overlying skin is easily appreciable on palpation, whilst in the majority of cases the unilateral swelling produces an appearance of deformity, which can be detected at a considerable distance, even when animals are at pasture.

ABSTRACTS.

[**A Method of Inoculating Cattle against Trypanosomiasis.** BEVAN (Ll. E. W.). *Trans. Roy. Soc. Trop. Med. and Hyg.* 1928. Aug. 22. Vol. 22. No. 2. pp. 147-156. Ex. *Trop. Vet. Bull.* Vol. 16, No. 4.]

Bevan gives a brief survey of his experiments in the treatment of trypanosomiasis in cattle which have been carried on during the last twenty years, and he acknowledges that the good results which have been achieved with potassium antimonyl tartrate in Southern Rhodesia must be attributed more to luck than judgment, as for a long time information was lacking as to the manner in which the drug acted, nor was anything known regarding the correct dose, and time or manner of administration.

For many years 1 g. of the drug dissolved in 100 cc. of boiled water has been the amount used, and this has been injected intravenously. In Southern Rhodesia the ill-effects recorded by HORNBY have not been noticed. They may have occurred, but they have not been of practical importance. The objections to this method are that the dose is very large, the escape of any of the solution into the subcutaneous tissue leads to abscess formation, and the time and labour necessary for the operation.

It appears to be a fact that while some investigators have attempted to obtain complete sterilisation of the animal as regards trypanosomes by drug treatment, such complete sterilisation is never achieved, and it appears to be unnecessary for practical purposes to obtain complete sterilisation. The results obtained in piroplasmosis by means of trypanblue suggested that the potassium antimonyl tartrate might act in a similar manner in trypanosomiasis, that is to say, by killing off the organisms, liberating toxins, and stimulating the formation of antibodies and thus keeping the trypanosomes remaining in check. That the drug does not effect a change in the trypanosomes themselves is indicated by the fact that the disease produced experimentally with trypanosomes derived from a successfully treated animal behave in the normal way. The recovery is then due to the resistance developed by the animal. A further point is that recovered animals are very resistant to re-infection.

Field tests showed that it was not necessary to put animals through a long course of treatment, for success was often obtained when only one, two, or three injections were given. In the course of a considerable number of years Bevan has inoculated imported animals against the tick-borne infections. The method used is the injection of "standardised" strains of the parasites passed through native calves until attenuated strains were arrived at. These, when used for the inoculation of imported animals, produced mild attacks from which they recovered. Excessive reactions to piroplasmosis infections were controlled by trypanblue injections.

It was decided to attempt to devise a method of inoculating against trypanosomiasis on the same lines. It was thought that if cattle could be inoculated with a known virus, and treated appropriately before being exposed in fly areas, the necessity for treating animals every month in the hope of catching newly infected animals would be done away with.

Experience has shown that in treating trypanosomiasis success depends to some extent on careful "timing." A number of strains of *T. congolense* were studied and it was found that the period of incubation was about ten days, with trypanosomes numerous in the peripheral blood by the 14th day. These disappeared on the injection of 1 gramme of potassium antimony tartrate in 50 cc. of sterile water, and remained absent for seven to eleven days. In all cases they had reappeared by the 14th day after the injection. A second injection on that day resulted in their disappearance again, but as a rule they had reappeared 14 days later. A third injection given a month after the second caused their disappearance again, and they only reappeared in very small numbers. On the first appearance of parasites the temperature rose, the animals were dull, with hanging head, drooping ears, lachrymation and a staring coat. This condition persisted until about a fortnight after the second injection. From this time onwards improvement set in and the lost condition was rapidly regained. To test the resistance to re-infection a highly virulent strain was produced by passage through rats. The duration of the disease was reduced by this means from 21 to 9 days. The resistance of the protected animals did not break down when they were inoculated with large doses of this strain, or with blood from cattle dying of infection in fly areas where the inoculation strain originated. Bevan proposes to carry out a large scale experiment by subjecting protected animals to natural infection.

One failure demonstrated a point of practical importance. A number of treated animals was sent into a belt to become infected naturally. All died of piroplasmosis. The fact was overlooked that the area where these animals were born and reared had been freed from ticks by systematic dipping, and the animals were susceptible to tick infection.

This drew attention to the danger of transmitting other diseases, and it was overcome by using sheep as virus carriers.

It is not claimed that the system is perfect, but it has yielded good results in practice in Rhodesia, and it is suggested that parallel tests may be made elsewhere.

[Traitement des piroplasmoses bovines. **The Treatment of Bovine Piroplasmoses.** VIEREY (F.). *Rev. Vét. et Jl. Méd. Vét. et Zootech.* 1928. July. Vol. 80. pp. 384-393. Ex. *Trop. Vet. Bull.* Vol. 16, No. 4.]

Treatment to be effective must be given early; if delayed, results are less satisfactory and, further, it is a point of economic importance that smaller quantities of the drugs are required when the disease is treated promptly. The author uses glucose, which is dissolved in an isotonic solution, and is obtainable in ampoules containing 125, 250, and 500 grammes (apparently of the solution).

In most cases the author finds that 3 ampoules of 250 grammes are sufficient. When treatment is delayed as many as 6 such ampoules may be required.

When treatment is begun early the content of one ampoule is injected subcutaneously behind the elbow at intervals of 24 hours.

XUM

Intravenous injection has not been found to be superior to subcutaneous injection. More than a hundred cases have been treated in this manner, and it is claimed that recovery took place in 82 per cent. Of the failures 12 per cent. were attributable to delay in beginning treatment.

Brief details of a dozen cases are given. The treatment generally results in a rapid fall of temperature after the first dose of glucose. There may be a slight rise again, but this is rapidly checked by the second dose. In all cases in which treatment was begun early, but which nevertheless relapsed, evidence of serious involvement of the lungs was promptly forthcoming.

The author puts forward certain theories to explain the beneficial effects produced by the injections of glucose.

[Recherches thérapeutiques sur deux maladies parasitaires : la coccidiose et la trichostrongylinose. **Experiments in the Treatment of Coccidiosis and Trichostrongylosis.** MAROTEL. *Rev. Vét. et Jl. Méd. Vét. et Zootech.* 1928. Apr. Vol. 80. pp. 204-207. Ex. *Trop. Vet. Bull.* Vol. 16, No. 4.]

The author claims as the result of experiments carried out with eight bovine animals affected with trichostrongylosis, and six bovines and five rabbits affected with coccidiosis, to be in a position to advise systems of treatment which, if followed carefully, will effect cures in both categories of diseases.

Bovine coccidosis. 1. Remove all bovines healthy and diseased from the pasture where the infection is being picked up, and utilise the grazing for horses and sheep.

2. Infected animals are to be housed, while the healthy are to be placed on dry ground, as there will be no risk of infection since moisture is necessary for sporulation of the coccidia.

A mixture of 10 to 15 grammes each of thymol and tannoform is given to each animal daily for 5 days. It is advised that the powdered drugs be sandwiched between slices of beetroot or mangold. Animals are said to eat this greedily.

Also each animal is to be given morning and evening for 5 days a rectal injection of 2 litres of 1 per cent. sulphate of copper solution.

Re-infection is prevented by careful collection and burial of fæces, and disinfection of the standings with boiling water twice a week.

All green food and stagnant water must be strictly avoided.

For parasitic gastro-enteritis of bovines the treatment advised is as follows :—

1. Remove the animals from infested pasture.

2. Diseased animals are to be isolated and their fæces destroyed. The fæces of apparently healthy animals are to be similarly dealt with as they are certain to contain eggs.

3. 300-500 cc. of 1 per cent. sulphate of copper is to be given before food in the morning "every 5 days for 15 days" and no purgative. For the sheep the dose is 50 to 100 cc.

The fæces are to be destroyed.

(*Continued at foot of next column*).

TRANSLATION.

Death of Karl Krall, Owner of the "Thinking Horses" of Elberfeld.*

As we have already reported, Karl Krall died on the 12th January, shortly after an attack of pneumonia, in the Elberfeld Hospital, at the age of 66.

He was the proprietor of a jewellery business in Elberfeld, and his ample means made it possible for him to devote himself to his life's work, which lay quite apart from his daily business.

Incited by the experiments of Herrn von Osten with his "Wise Hans," he devoted himself with the whole ardour of his keen mind to Animal Psychology, to the end of proving that animals are near us in the possession of the thinking faculty. At great cost he erected in Elberfeld an "Academy for Animals," where his first pupil was a pedigree horse, but there were other animals as well, including an elephant. The greatest talent was developed under Krall's instruction and culminated in his two celebrated horses "Muhamed" and "Zarif" (though Muhamed appeared an animal genius from the beginning). Krall's method of instruction must be regarded as a great pedagogic accomplishment of its kind. Krall said that he had taught the animals to count only up to 300, and that they themselves had learned the rest.

The almost incredible accomplishments of his Zarif and Muhamed, together with those of Wise Hans, were the subject of a scientific, two-volumed work published by Krall, entitled: "Thinking Horses: Contributions to Animal Psychology Based on a Few Experiments," which brought him much acknowledgment, admiration and gratitude besides a good deal of abuse. Although the abuse was now and then sought, it came partly from opponents who had not taken the trouble or opportunity to investigate the claims for themselves; but in spite of it all Krall did not let himself be led away from his chosen path, nor allow his zeal to be diminished. When it was possible, he sought to refute the objections and to make more clear to his opponents the result of his enquiries.

One proof for this purpose was his experiments with the blind two-and-a-half-year-old stallion "Berto," which also was not capable of perception by its sense of smell. This horse, which readily responded to instruction, could not, for example, smell a carrot unless one placed it directly

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(*Continued from previous column*).

The author gives no details regarding the methods by which he was able to assure himself that the treatments he advises are really effective. He only states that his diagnoses were based upon microscopic examinations. He states that trichostrongylosis in bovines is caused by *Hæmonchus contortus, Hematodirus filicollis, Trichostrongylus instabilis*, Cooperia and Ostertagia. He recognises that some of these are readily detectable with the naked eye and others are not, but he gives no indications of the steps he took to ascertain which species were present in the small batch of animals which he had for treatment.

* Translation from *Münchener Tierärztliche Wochenschrift*, No. 10, 6th March, 1929.

under its nostrils. Krall thus reduced to absurdity the objections concerned with sight and smell. In order to refute the suggestion of acoustic signals he caused the animal to be tested to remain alone in the instruction room, and the observer was placed behind the stall door. The suggestion of thought transference was dealt with by the fact that the animal had erroneously treated an addition sum as subtraction. Further, the explanation of the semi-conscious was offered, but as this did not suffice, the riddle of the thinking animals was explained by drawing a parallel between the pawing of the animals and the table rapping of a spiritualist séance, but by this explanation the animals were at the same time both medium and table.

It is, moreover, well to remember that Krall demonstrated how his animals learned and gradually taught themselves. All attacks on Krall eventually miscarried before the facts, and the many significant experiments show us that here we stand before a riddle of Animal Psychology which still awaits solution.

Those who knew Krall personally or who heard him lecture, were deeply convinced that this keen animal lover sought only the truth, and never followed personal interests. He made the greatest pecuniary sacrifices in order to investigate the animal mind which became such a great attraction for him.

On March 31st, 1925, he spoke before the Munich Veterinary Association in a lecture room of the Veterinary Faculty, when a large number of the lecturers of the Faculty were present, and he there made an enduring impression. He also spoke before the Biological Association on the 23rd April, 1928, when the Zoology lecture room was placed at his disposal.

His literary activities covered the above-mentioned work, and a large number of papers, all concerned with Animal Psychology, which bore witness to Krall's scientific earnestness.

The World War and the inflation made it impossible to continue the costly experiments at Elberfeld, and Krall went to Munich, where he built for himself a new home, in the garden city of Harlaching in Isartal, which he had prepared for the recommencement of his experiments. A large, modern laboratory was planned, but death stepped into the middle of this much-hoped-for work.

Shortly before his departure for Elberfeld for Christmas, 1928, he spoke of his deep anxiety concerning his researches in Animal Psychology, inasmuch as he was unable to leave a successor to carry on the work. This seems almost like a presentiment and the anxiety will be justified if no one is found to take over this intellectual inheritance.

In his plans and work, Krall had the intelligent and true co-operation of his wife, who is now left a widow. He had three sons, but one fell in the war while the other two had undertaken the management of the business in Elberfeld.

We close with a few words uttered more than 100 years ago by the animal psychologist, Peter Scheitlin, whom Krall especially venerated:—"Man understands the animal because man has a mind, and the animal understands Man because the animal has a mind. Like joins itself completely only with like. The more we occupy ourselves with the minds of animals, the more estimable will the animal be to us, and Nature more wondrous."—MAYR.

F. N.

From The Veterinarian, April, 1828.

Veterinary Education.

TO THE EDITOR OF THE VETERINARIAN.

Sir,—If you deem a couple of letters, addressed to a Young Veterinary Student, worthy a place in your valuable Journal, you will oblige me by inserting them.—I am, etc., PHILO-VET.

Mar. 3, 1828

. . . . . .

My Dear Young Friend,—I most willingly comply with your request, and will trace the outline of that course of study, which, in my humble opinion, you will with most advantage pursue during your attendance at the Veterinary College.

My first advice, or, rather, my earnest entreaty, will be "*Aim high enough.*" It is true that, not many years ago, the name of Veterinary Surgeon was unknown. We were all Farriers and Cowleeches, mingling with, and belonging to, the lowest class of society. If we are now permitted to assume the title of Veterinary Surgeon, that higher designation, while it confers on us many privileges, imposes corresponding duties. If we are no longer the groom's companion, the coachman's friend, and the oracle of the ale-houses; if we call ourselves, and are acknowledged to be, members of the medical profession, it is taken for granted that we possess the acquirements and manners suited to our new station. If we have them not and if we do not seek to obtain them, we shall expose ourselves to deserved contempt, and bring disgrace on the profession to which we belong. Therefore, "*Aim high enough.*"

The education of a farrier, or the acquirements of the Veterinary Surgeon for too many years past, will no longer satisfy the just expectation of the public, or establish your own reputation and success.

My next advice, and most strongly urged, would be—*Cultivate a deep interest in the weal and woe of your patients.*

What is the avowed, I trust, the true and important object of your profession? It is to increase enjoyment and diminish pain.

Although your patients have not the intelligence of the noblest of the works of God, they often display much sagacity; they are attached to you, faithful, useful. It is disgraceful in any individual to injure or torture them, and much more so in the man who pledged himself, by the profession which he follows, to be their protector and friend.

You will have it in your power, and it will be your duty, to correct many absurd and cruel practices, whether by the groom or the master; and, if you would succeed in your laudable attempt, you must not sin yourself.

Your patients will not be able to tell you either the seat of their ailments, or the degree of their pain; and you must form your opinion of many of their diseases by a very careful observance of their appearance and habits. If you approach them in a brutal way, and the oath and the blow, should they offend you, go together, you agitate and frighten them, and you cannot possibly judge of their actual state, or form a rational decision as to the remedial measures you should pursue. Approach a horse gently and coaxingly, and you have the true state of his pulse and his respiration. Go up to him as too many farriers and some Veterinary Surgeons do, and you increase the heaving of his flanks, and most strangely quicken the beatings of the heart.

If you would be regarded as a skilful, and esteemed as a humane, practitioner, and would have an internal and powerful motive to be indefatigable in the discharge of your professional duty, cultivate a spirit of humanity. The professional butcher is universally and deservedly execrated.

You ask me what period of time you *must* allot to your attendance on the instructions and practice of the College.

I apprehend it was designed, at the institution of that Seminary, that the education of the Veterinary Pupil should occupy two years. In the French Colleges four years are devoted to this purpose.

The *res angusta domi* of many students will not permit them to remain thus long; but the true interests of the pupil and the respectability of the profession demand that the period of two years should not be very much curtailed. There is no royal road to learning. The age of miracles has long gone by, and I hold it to be impossible for any young man, in six or eight months, to acquire the habits and the knowledge requisite to make him a competent Veterinarian.

You tell me that you will probably be able to remain 15 or 18 months. I could have wished that the period might be extended. These months, however, must be diligently and honestly employed. You have not one moment to lose.

At once commence the close and anxious study of Anatomy On this foundation, and on this alone, must your medical acquirements and future respectability be reared. How will you repair the machine unless you perfectly understand its construction? There is scarcely a disease—there is certainly no operation—in which accurate anatomical knowledge will not only be useful but absolutely necessary.

Be not content with a careless survey of the animal frame. Diligently, laboriously study *minute* Anatomy.

It is true that a portion of this will soon be forgotten; but that which is most important to your fame and your success will remain. Enlarged and correct conceptions of the structure of the frame, and the function of the various organs, will be indelibly engraven on the tablet of the memory. Some parts of the picture may wear away, but the grand outline will never be effaced. The steps by which we ascended the eminence of science may not be remembered, but the extensive boundless prospect will continue to greet our view.

You will have two excellent books to guide your studies, Blaine and Percivall. I will not discuss their comparative merits. You may safely follow them both, and neither can be spared.

Begin with the Skeleton. If you cannot obtain access to that at the College, the large plates published originally in Blaine's Folio Anatomy, and similar ones by Kirtland, may easily be procured. Make yourself well acquainted with the names of the different bones, their precise form, their relative situation and connection. This is the first and not very difficult task, and advance not a single step until you have perfectly mastered it.

Then take one of the extremities, and study its muscles and the manner in which its different parts are connected together. Begin at the upper end, and carefully work your way downward.

As you proceed endeavour to obtain not only a correct idea of the form and connection of each part, and the origin and insertion of every muscle, but of their proper function and use. Let your physiology, even from the beginning, and so far as observation and diligence will accomplish it, keep pace with your anatomy.

While you are thus engaged on the skeleton, or the extremities, devote a portion of every day to the perusal of some elementary treatise on Physiology, that you may acquire some conception, afterwards to be enlarged and perfected, of the fundamental principles of life. I do not know a better treatise on Physiology than that of Richerand as translated by Copland, and rendered more valuable by his copious notes. It is not, perhaps, a very profound book, but it is well adapted for the perusal of the young student.

Read the first 75 pages, until you arrive at the functions of the different organs. There stop. You will injure yourself by poring over that which you do not understand, and you cannot understand the function of an organ until you are perfectly acquainted with its anatomy.

When you have arrived at the 75th page of Richerand begin some popular treatise on Natural Philosophy. Mr. Marcet's Conversations or Millington's Epitome are the best. This will admirably prepare you for the consideration of the functions of the more important organs.

Believe me, my young friend, that they counsel you wrongly who would persuade you that a knowledge of Natural Philosophy will do the Veterinarian no good. Among those by whom you will probably be employed, and particularly among the wealthy agriculturists, you will find many inquiring minds. Your natural and best associate and friend, the medical man of the town or village in which you may be settled, will not expect to find you less informed than his youngest apprentice, or his boy at school. Depend upon it, that if you keep not pace with the march of improvement you will be slighted and despised.

What station are you to fill in life? When every school-boy, and almost every mechanic, can now explain many of the phenomena of nature, are you still to be consigned to the degrading ignorance of the common farrier? While you mingle with the middle, and even to some extent with the superior ranks of society, are you to be painfully depressed by the consciousness of your comparative ignorance?

How will you understand, or your teachers explain, the functions of many parts without a reference to, and previous acquaintance with, the rudiments of Natural Philosophy? The elucidation of the beautiful structure of the Eye—the complicated mechanism of the Ear—the processes of respiration and circulation, will be most imperfectly comprehended by you, or absolutely unintelligible.

Let part of your evening be devoted to a review of the progress you have made, or the knowledge you have acquired, during the day. If you have any plates (we have very few, and not very good ones) trace on them the muscles and parts you have dissected. Read about them. Talk of them with your companions. Your Physiology so far as you are now permitted to go—your Natural Philosophy; think whether you understand them. Begin to apply them as far as you can. Take the beautiful and most useful application of the principle of the lever to the construction of the limbs. The few contrivances, yet some of them very striking, to lessen the expenditure of muscular power; and, generally speaking, the lavish expenditure of power to preserve beauty of form, and quickness and perfection of action.

Are these things to employ every evening? They are to employ as many evenings as you have resolution to give them. These few months are most important to you. Neglect now can never be compensated.

By following this apparently strict counsel, you may sacrifice some pleasure, falsely so called, but you will enjoy the greater pleasure of conscious improvement and well-earned esteem.

Having conquered the skeleton and the extremities, proceed to the organs which are connected with the important functions of life. Thrice in the week you will attend on the Lectures of the Professor. The different organs and their functions will be demonstrated and explained by him. Take them in the order in which they occur in his Lectures. While his descriptions and illustrations are fresh in your memory carefully dissect the part. One dissection at that time will be worth 50 mangled subjects. The country over which you will then travel will be familiar to you You will recognise the different objects as they present themselves. You will comprehend all their connections and uses; and the impression which will then be made on your mind will not afterwards be obliterated.

You will have no excuse for the neglect of this. Your subjects are easily procured—they are not offensive or dangerous, and they will not cost you much. Every impediment to the knowledge of minute anatomy is thrown in the way of the student of human medicine, by the existing state of our laws, and by general prejudice; but no apology can be made if you neglect that without the knowledge of which you will be a mere pretender.

Make yourself thoroughly master of each organ as you go on. Compare the account of each, given by your Lecturer, with what careful dissection discovers; and his

conclusion with your own. Consult Richerand on each. Take him for all in all, I cannot recommend to you a better book. Read Percivall and Blaine. The study of these works, without dissection, will be comparatively unsatisfactory and unimproving; but, after the diligent use of the scalpel, you will be prepared to make all that is valuable in them your own.

In the evening, after reviewing the work of the day, and continuing your physiological and philosophical reading, take some book on Comparative Anatomy. Coulson's Edition of Lawrence's Translation of Blumenbach is an excellent work. I must here beg leave to enter my humble but decided protest against the assertion of your expected Professor, that Comparative Anatomy will mislead the Veterinary Student, and is worse than useless to him. No one knows better how to use, and very properly, acquirements drawn from Comparative Anatomy in defence of his own favourite theories.

A consideration of the different structure of the same organ. according to the situation and wants of the animal—the difference of function depending on this difference of structure—and the difference in the nature, and connection, and treatment, and termination of disease resulting from variety of structure and function must be very interesting, and highly advantageous.

The muscular stomach and short intestines of the dog; the curiously constructed stomach and enormous length of bowel in the horse; the four stomachs, and yet the long and capacious intestines of the ruminants, will afford much matter for useful reflection. These will be your patients. Comparative Anatomy, thus far, must be studied by you, if you are faithful to yourself and your future practice: and I should advise you to carry your researches as much beyond this as your leisure and opportunity will permit. At all events you will observe and admire the various means by which the Great Architect accomplishes the same object, and all of them wisest and best.

Chemistry will now require your attention, to prepare you for the means with which you are to combat disease. It is absolutely necessary that you should be acquainted with the nature of drugs—the different affinities of substances—the changes produced by combination—the degree to which you may probably neutralise some valuable property, or even excite deleterious agency—the methods by which you may ascertain the genuineness of your drugs, and be guarded against imposition where it is too generally and abominably practised.

Certainly, if your Pharmacopæia is to consist of only four or five drugs, and "you may carry the whole of them in your pocket," chemistry cannot be very useful to you in your pharmaceutical operations. This, however, is a most erroneous, absurd, disgraceful,unjustifiable,dangerous doctrine, and bitterly would you rue the day in which you adopted it as your creed.

In consideration of its connection with agriculture, with the arts, with commerce, with the phenomena of nature, and with the general business of life, a total ignorance of chemistry would be a sad reproach. The mere mechanic would even discover your deficiency, and heartily despise you. I do not wish you to enter into all the intricacies of chemical research, but I would urge you to cultivate a knowledge of its good and fundamental principles.

Having become acquainted with the structure and function of the different parts, you will be qualified to enter on the consideration of their diseases. It is a frequent and pernicious error of young students, to form their notions of disease, and to speak peremptorily of its nature and treatment, before they know anything of its cause, its seat, its connection and effects.

When you have completed the Anatomy and Physiology of any part, and not before, avail yourself of every opportunity to study its ailments. Without this preparation you are exposed to a thousand misconceptions, and may adopt a wild and mischievous theory which will mislead and injure you through life.

As each case presents itself inquire—Is it a disease of structure or of function? Of what function? What others may sympathise? How far may it have produced or been the consequence of a change of structure? Does it proceed from excess or defect of stimulus? etc., etc.

You can never acquire correct and enlarged conceptions of the proper indications of cure, until you are perfectly acquainted with the nature of disease. This, however, is not the opinion or practice of many students. They travel to the College to obtain a diploma, and to learn what they are to give in certain diseases. This species of knowledge is mere empiricism; and the exhibition of the same drug under all the varieties and changes of disease will lead to dangerous and ruinous consequences.

Let me entreat you diligently to inquire into the nature, seat, and connection of every disease. Consider what you are to *do*, not what you are to give. What object you are to accomplish. The purpose and object once settled, the means will not be difficult to determine.

Provide yourself with a *Case-book*. Accompany your Professors in every clinical round. If you are not perfectly acquainted with the nature and seat of the disease, apply to them for information. Do not pass by a single case (so far as your anatomical and physiological researches have been carried) until you thoroughly comprehend it.

I do not advise you to tease your Professors with foolish and impertinent questions, but you have a right to ask information from them, and it will give them great pleasure to instruct you.

Make every case, for which your studies have prepared you, your own; write down the symptoms; the conclusions which you draw from them as to the nature of the disease; the means adopted; the purpose intended to be accomplished; the effect produced; whether change of symptoms has caused alteration of treatment; how far new affections have become connected with the original one.

The study of a dozen cases, thus followed up, will do you more good than the perusal of a thousand volumes; or an attendance on the most enlarged practice, without note or comment. Some point of Physiology or Pathology will be daily illustrated, some rule of practise exemplified, and there will scarcely be a disease that will not bring to your recollection important principles and precepts, and impress them more deeply on your mind.

I fear that I have wearied you by this long epistle; but I have yet to speak of the Lectures of the College, and your associations there, and some other not unimportant particulars. They shall be the subject of another letter shortly.—Yours, etc., PHILO-VET.

MILK CONFERENCE TO BE HELD AT READING.

The Certified and Grade A (T.T.) Milk Producers' Association is to hold a conference in the University, Reading, on April 16th and 17th. The papers on the first day will be mainly directed to describing the growth of the movement in various districts. On the second day there will be a variety of subjects, including milking machines (speaker, Mr. A. T. R. Mattick), the tuberculin test (Major G. W. Dunkin), and the variation in the fat content of milk (J. Mackintosh). The hon. secretary is Lt.-Col. C. Maddock, Foxglade House, Shinfield, Reading.

One of the long bones of an animal dead from a septicæmic disease is the best specimen that can be offered to the laboratory for a bacteriological diagnosis. Its marrow is more apt to contain pure cultures of the organism sought than any other part of the carcase, and it is well protected against soiling in removal and handling.—*North American Veterinarian.*

XUM

DIVISIONAL REPORTS.

North of Scotland Division, N.V.M.A.*

The half-yearly meeting of the Division was held in Marischal College, Aberdeen, on Saturday, January 19th. Mr. R. E. Drennan (President) was in the chair, and there were also present the following members:—Messrs. J. Burgess, D. Clerk, D. Cumming, J. C. Grant, W. Hepburn, G. Howie, J. Lyon, W. Macpherson, J. C. Mitchell, W. J. Rice, A. Sievwright, and J. McAllan, Hon. Secretary.

The Minutes of last meeting, as they appeared in the *Veterinary Record*, were taken as read and were approved.

Mr. DRENNAN in a few well-chosen words, referred to the loss which the Division had sustained in the death of Mr. Wm. Brown, Marischal College. Mr. Drennan referred to Mr. Brown's great professional ability, to his helpful nature, and to his pleasing personality. The members, by standing in silence, expressed their sympathy.

Apologies for absence were received from Messrs. W. and J. Anderson, Keith, whilst Dr. Bradley wrote regretting that he was unable to be present.

CORRESPONDENCE. The Secretary read letters, dated October 4th and November 27th, 1928, from the General Secretary of the National Veterinary Medical Association with regard to the Local Government (Scotland) Bill. These letters asked for the views of the members regarding the Bill, and for any proposals they might have to make as to the manner in which the matter should be dealt with by the N.V.M.A. It was the general feeling of the members of the Division that the Bill was so full of controversial matter affecting all manner of interests that it was well nigh impossible for them to formulate any definite proposals with regard to the parts of the Bill which would directly affect members of the veterinary profession. The members realised that, with regard to the Milk and Dairies Act, it was possible that part-time men might suffer, but at the same time it was pointed out that such might not be the case, since it would be practically impossible for the present staffs, at any rate of whole-time officials, to carry out the work of the Act. The general conclusion come to by the members was that, whilst it was not possible for them to go very fully into the matter, it might be sufficient if they indicated that the N.V.M.A. should keep fully before it the interests of part-time officials as they might be affected by the provisions of the Bill.

ELECTION OF OFFICE BEARERS. Mr. DRENNAN proposed and Mr. CUMMING seconded that Mr. W. J. Rice, Brechin, be elected *President* for the ensuing year. This was unanimously agreed to. Mr. George Howie was elected *Senior Vice-President*; Mr. Sievwright, Tarland, *Junior Vice-President*. The *Honorary Secretary and Treasurer* was reappointed. The following were elected members of *Council*: Messrs. W. Anderson, J. Anderson, D. Crabb, R. E. Drennan, and J. C. Grant.

New Member. Captain J. I. Edgar, Banchory, was elected as a member of the Division.

Next Meeting. With regard to the business for the next meeting, arrangements for this were left in the hands of the Honorary Secretary. The feeling of the members was that some member of the profession might be asked to come north to do one of the latest operations.

The President then called upon Mr. N. M. L. WALKER, Advocate, Lecturer on Veterinary Jurisprudence at the Royal (Dick) Veterinary College, to deliver his paper on "The Law Relating to the Carriage of Live Stock by Rail."

[This paper is published elsewhere in this issue, together with the report of the ensuing discussion.—Ed.].

Mr. Walker's paper was exceedingly interesting and instructive. The members appreciated it to the full, and the discussion on the paper, although not long, was most enjoyable. Mr. DRENNAN conveyed to Mr. Walker the very best thanks of the Division for his kindness in coming from Edinburgh to give the members such a very fine paper. Mr. WALKER expressed his pleasure at being asked to come north.

The meeting closed with a vote of thanks to Mr. Drennan for his conduct in the chair.

J. McALLAN,
Hon. Secretary.

* Received on 7th March, 1929.

West of Scotland Division, N.V.M.A.*

ANNUAL MEETING IN GLASGOW.

A meeting of the West of Scotland Division of the N.V.M.A., was held at Glasgow Veterinary College on February 6th, 1929.

Mr. Donald Campbell took the Chair and the following members were also present: Messrs. Donald Campbell, J. G. McGregor, Peter Meikle, A. H. Stark, William Robb, James Macfarlane, Thomas Johnston, and George W. Weir (Hon. Secretary).

Visitors.—Messrs. D. B. Rodger, and J. W. Emslie.

The minutes of the previous meeting were read and approved.

ELECTION OF OFFICERS.

This being the Annual Meeting the following office-bearers were then elected:—*President*, Mr. George W. Weir; *Vice Presidents*, Messrs. Peter Meikle and William Robb; *Secretary and Treasurer*, Professor A. W. Whitehouse; *Representatives on Council N.V.M.A.*, Mr. J. Gillray McGregor and Professor A. W. Whitehouse; *Auditors*, Messrs. James Macfarlane and Robert Mitchell.

The new President, having taken the Chair, proposed for membership Professor J. W. Emslie, B.Sc., M.R.C.V.S., who was unanimously elected.

The Treasurer (now President), Mr. G. W. WEIR, submitted the balance sheet, and it was approved.

A brief and rather desultory discussion took place as to whether veterinary premises will be subject to derating in so far as they are devoted to horse-shoeing.

REMOVAL OF THE PLACENTA IN COWS.

Mr. DONALD CAMPBELL then re-opened an adjourned discussion on the above subject.

In submitting an analysis of the conditions and results in 583 consecutively-recorded cases, he made no claim to any exceptional success, his results being probably about

* Received on 11th March, 1929.

the average. He felt, however, that any conclusions to be drawn from the figures would thereby be all the more valuable. The statistics were as follows:—

Total Number Cleansed, 583.

Calving under 7 months	44	7·54 per cent.
„ about 7 „	49	8·40 „
„ about 8 „	58	9·94 „
„ about 9 „	188	32·24 „
„ over 9 „	163	27·95 „
No note of time ...	81	13·89 „
	583	99·96 „
At full time	163	27·95 „
Under full time ...	339	58·14 „
Time not known ...	81	13·89 „
	583	99·98 „
Completely cleansed ...	264	45·28 „
Incompletely cleansed	284	48·70 „
Unsatisfactory	35	6·02 „
	583	100·00 „
Twins, 30; Triplets, 1		6.00 „
Deaths, 11		1·88 „

In two of the fatal cases it is doubtful if uterine condition had anything to do with death.

In his comments on the above statistics, the speaker began by pointing out that though only 45 per cent. were completely cleansed and though 6 per cent. were classed as unsatisfactory, the death-rate was less than 2 per cent., which did not seem heavy. In considering the question whether cows should be cleansed at all, he asked what happened if they were not—progressive decomposition took place until the membranes were loosened at the cotyledons, while in many cases the membrane broke at some weaker part before loosening took place. In any case, a week to a fortnight elapsed before the main body of the cleansing became detached.

On the other hand, by manual removal, 45 per cent. of afterbirths were completely evacuated in two or three days and all further risk of unpleasantness practically eliminated. Could it be maintained that 45 per cent. would do just as well if left uncleansed, or that the total death-rate would be no higher than 1·88 per cent.? No doubt some cows would be better uncleansed, if one could only foretell, but, in his experience, it was not necessarily the cow which gave most anxiety at the time that caused the most trouble afterwards. Further, though eleven cows out of 583 died *after* being cleansed, it did not follow that they died *because* they were cleansed.

The choice of time for removal was dependent on the condition of the placenta.

Did the *presence of twins* dispose retention? In the list were thirty cases of twins and one of triplets, say 6 per cent. Was 6 per cent. a high proportion of all births? He did not think so.

Was there a relation between retained placenta and contagious abortion?

The figures, 27·95 per cent. at full time, 58·14 per cent. at less than full time, 13·89 per cent. at unknown time, suggested a connection.

He proposed that members in cattle practice should undertake a little research by means of the abortoscope, each member, at his own expense, to apply the abortoscope test to say twenty-four consecutive cases of retention, in each case making a control test of a cow calved and cleansed normally. Results to be handed to the Secretary of the Division.

In the discussion that followed, Professor W. ROBB recommended capsules of animal charcoal and tr. iodi. for cases where part of the membrane was retained. Mr. J. G. MCGREGOR had had good results in similar cases from hamamelis extract.

Professor WHITEHOUSE observed that in ranch cattle, where individual treatment was impossible, retained placenta caused loss of condition but probably no deaths.

Mr. P. MEIKLE found that his experience largely bore out that of Mr. Campbell.

Mr. TAYLOR described cases in which he had found douching beneficial.

Mr. CAMPBELL replied, and a vote of thanks to the Chairman terminated the meeting.

A. W. WHITEHOUSE, *Hon. Secretary.*

Ayrshire Division, N.V.M.A.*

ANNUAL MEETING AT AYR.

The Annual Meeting of the Ayrshire Division of the N.V.M.A. was held in the Ayrshire and Galloway Hotel, Ayr, on February 21st, 1929, with the President, Mr. W. G. Forbes (Kilmarnock) in the Chair.

The other gentlemen present were Messrs. R. M. Smith, Donaldson, McDonald, Gillmor, McGregor, Gardner, Barbour, Douglas, Laird, and Brown, Hon. Secretary.

The subject of the treatment of poor people's animals was discussed, and it was decided that, as there was no large centre and the members were in the habit of treating poor people's animals free, or at a small charge, there was no necessity to adopt any scheme for the purpose.

The Secretary read a communication from the National Horse Association of Great Britain, as a result of which it was agreed, on the proposition of Mr. MCGREGOR, seconded by Mr. FORBES, that the Division apply for affiliation.

A communication from the General Secretary of the N.V.M.A. *re* the constitution of the Council of the N.V.M.A., was read. After considering this fully, it was moved by Mr. Douglas, seconded by Mr. Forbes, and agreed that the Association should consider the whole composition of the Council, and the place of meeting, in order to facilitate the attendance of country members.

New Member. Mr. McDonald (Perth) was unanimously elected a member of the Division.

ELECTION OF OFFICERS.

The meeting then proceeded to the election of Office Bearers for the ensuing year.

* Received on 19th March.

It was proposed by Mr. A. DOUGLAS and seconded by Mr. W. E. FORBES that Mr. R. M. Smith (Galston) be elected *President*. This was unanimously agreed to.

Vice-President: Mr. A. Douglas.

Secretary: Mr. Brown (re-elected).

Representatives for the Division on the Council of the N.V.M.A.: The President and (*ex-officio*) the Hon. Secretary.

Obituary. The CHAIRMAN made feeling reference to the loss the profession and the community of Ayr had sustained in the death of Mr. W. A. McGregor, sen. He also expressed on behalf of the meeting their sympathy with Mr. A. Douglas and his father, Mr. T. A. Douglas, on the death of Mrs. Douglas, sen., and the Secretary was instructed to send excerpts from the Minutes to Mrs. McGregor and Mr. Douglas conveying this expression of sympathy, which the gentlemen present signified by standing a few moments in silence.

The members subsequently took tea together.

DAVID BROWN, *Hon. Secretary*.

Paralysis of Fowls.

Under the title of "Paralysis of Fowls," Doyle (*Animal Pathology Exchange*, Jan., 1928) describes a paralytic disease of domestic fowls that appears to have attracted little attention in this country, notwithstanding that its occurrence and seriousness are not questioned among poultry pathologists and observing students of poultry husbandry. According to the author, poultrymen regard the ailment as one of their most serious problems.

The disease appears to be closely associated with ailments described under other names, such as iritis, encephalitis, myelitis, neuritis, etc., having paralysis as one of the chief manifestations and a pathology showing a common etiology.

The disease makes its appearance in fowls at about the age of six to seven months, and in some instances at one year of age or more. In the younger fowls, paralysis is the dominant symptom, while in older fowls the ocular symptoms predominate; that is, there is more iritis than paralysis in adult fowls as a rule, and moreover, the nervous lesion may implicate the vagus or splanchnic and bring about a state of ill health without locomotory phenomena; attack the brain or spinal centres and cause ataxia, giddiness, excitement, or lethargy, or affect the brachial or sciatic nerves and produce paralysis of the wings and legs respectively. The ocular lesion evolves slowly and develops into the condition known to poultrymen as "white eye" or "glass eye."

The lesions found in the nerves indicate that the disease is caused by a neurotropic virus. A perivascular cell infiltration in the tissues of the nerve centres and a patchy one in the perpheral trunks implicated, suggest this as being the etiological factor, but inoculation experiments have thus far been negative.

Paralysis of fowls must be differentiated from the polyneuritis due to vitamin deficiency, rickets, and arthrites of various origins.

The disease appears to be hereditary, since when once introduced into a previously paralysis-free farm, it is

(Continued at foot of next column.)

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Aug. 31st to Sept. 6th.—N.V.M.A. Congress at Ayr.

April 15th.—Meeting of the Editorial Committee, N.V.M.A., 10 Gray's Inn Square, W.C., 4-30 p.m.
" 16th.—Meeting of the Derbyshire Division, N.V.M.A., at Derby.
" 17th.—Dinner of the North Wales Division, N.V.M.A., at the Imperial Hotel, Colwyn Bay, 6-30 p.m.
" 19th.—Meeting of the Mid-West and South Wales Division, N.V.M.A., at Bath.
" 26th.—Meeting of the Royal Counties' Division, N.V.M.A., at Guildford.
" 30th.—Last day for payment of Annual Fees to R.C.V.S.
May 9th—R.C.V.S. Council Election—Last day for Nomination of Candidates.
" 18th.—Entries due for D.V.S.M. Examination.
" 23rd.—R.C.V.S. Annual Report and Voting Papers issued.
" 30th.—R.C.V.S. Council Election—last day for receipt of Voting Papers.
June 6th.—R.C.V.S. Annual General Meeting.
" 17th.—D.V.S.M. Examination commences in Edinburgh.
July 3rd.—R.C.V.S. Annual Dinner.
" 4th—R.C.V.S. Committee Meetings.
" 5th.—R.C.V.S. Council Meeting.
" 9th.—R.C.V.S. Written Examinations.
" 11th.—R.C.V.S. Oral Examinations begin.

The Secretary, N.V.M.A., desires to learn the name and address of the member who, on April 4th, forwarded a remittance of £2 2s., in a registered packet from Lincoln, but with no indication of his identity.

THE AYR CONGRESS.

Good News for Golfing Members. What golfer has not dreamed of playing over the world-famed championship course at Prestwick? You will have your opportunity in September, as the Prestwick Golf Club has granted permission for a limited number of members to play over the course each day from 2nd to 6th September. The Prestwick St. Nicholas Golf Club has granted similar privileges for the splendid St. Nicholas course for each day, except the Wednesday.

Victoria Veterinary Benevolent Fund "Benefit Performance." We are glad to be able to inform members

(Continued from previous column.)

passed down to succeeding generations, and as a rule its first appearance on such a farm dates back to the purchase of hatching eggs or baby chicks. Parasites, including coccidia, have been excluded as probable factors.

Sanitary measures have no effect in eradicating the disease from an infected flock. The only control measure of value is to avoid breeding from infected flocks.—*North American Veterinarian.*

that the item in the provisional programme of the Congress 'Tuesday Evening—Arrangements not completed," can now be amended to read: "Amateur Dramatic Entertainment on behalf of the Victoria Veterinary Benevolent Fund." In forwarding the above good tidings, the local secretary writes: "We are still hopeful of getting last year's world champions to appear in their Festival play, 'The Old Lady shows her Medals.' If they do not appear, the Ayr Amateur Players will put up the whole programme and can be depended on to give a creditable show."

R.C.V.S. Obituary.

Bovett, Edwin William, George Street, Bridgwater. Graduated, London, December 17th, 1890. Died, 27th March, 1929, aged 63.

Mr. Bovett was one of the best known veterinary surgeons in Somerset, and had been in practice for many years. He was a vice-president of the Western Counties Division of the National Veterinary Medical Association, and was a prominent Freemason.

Mr. Bovett was 65, and leaves a widow, three sons, and six daughters. The funeral was largely attended, those present including many agriculturists and Freemasons. At the interment in Wembdon Road cemetery, Masonic rites were observed.

Personal.

Illness of Professor Wright. His many friends in the profession will regret to learn that Professor J. G. Wright, who was recently appointed to the position of Professor of Materia Medica and Therapeutics at the Royal Veterinary College, London, was suddenly taken ill and admitted to the Middlesex Hospital on Thursday of last week. Professor Wright is suffering from abdominal trouble, the nature of which has not as yet been diagnosed definitely, but we understand that he is making satisfactory progress.

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Birth: Baird.—At 28 Blacket Place, Edinburgh, on March 23rd, to Rita, wife of W. H. W. Baird, B.Sc., M.R.C.V.S., D.V.S.M., Dar-es-Salaam, a daughter.

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Marriage: McCleery—McGeown, April 2nd, 1929. At the Abbey Presbyterian Church, Dublin, by the Rev. J. C. Reaby, B.A., Edward Forde McCleery, M.R.C.V.S., D.V.S.M., Assistant Veterinary Officer, Leeds Corporation, youngest son of Mr. and Mrs. W. J. McCleery, Botanic Road, Dublin, to Freda, only daughter of Mr. and Mrs. H. McGeown, North Circular Road, Dublin.

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Will: Sumner, Mr. Walter, of Westgate, Heckmondwike, Yorkshire, veterinary surgeon (net personalty £7,916), £7,958.

World Poultry Congress in London.

Substantial allocations having been made by the Canadian Government for participation in the fourth World Poultry Congress to be held in London in July, 1930, arrangements are already being made in Canada and the United States for tours in the British Isles and on the Continent. A tentative arrangement has been made for an ocean liner to be placed at the disposal of the congress delegates, to sail from Montreal and to reach London about July 20th. After spending ten days in London for the congress at the Crystal Palace, parties would then set out on tours of the British Isles, visiting Cambridge University, the Harper Adams Agricultural College, the poultry-farming district of Lancashire, the English Lakes, Scotland, Ireland, and part of Wales. Visits would afterwards be paid to France, Belgium, Holland, Germany, and Switzerland. It is estimated that the probable cost of this trip would be about $575. An illustrated brochure setting forth the purpose and the preliminary arrangements for the congress will be issued from the Ministry of Agriculture within the next few days. This will be circulated throughout the countries interested in the congress, many of which have already booked space at the Crystal Palace.

The Warble Fly.

The conditions imposed by the Australian Government bring into appropriate prominence the seriousness of the warble fly pest. It is stipulated that no cattle shall be shipped to Australia, through the station or otherwise, between May 31st and December 1st in any year. The reasons for this are the prevalence of the warble fly pest in this country, and the determination of Australia to prevent its introduction into the Commonwealth. This action on the part of Australia will bring home to stock-owners here the destructive character of this insect. Not only does it damage the hides of cattle to the extent of hundreds of thousands of pounds a year, but the incomputable injury to cattle in hot weather from the attentions of the fly must also be of enormous proportions. This is a pest that could well be eradicated if organised efforts were directed for the purpose. During the close period for cattle, sheep and pigs will monopolise the Australian space in the station.—*The Times.*

Occurrence of Gold in Food and Animal Organs.

A method for determining traces of gold is given, by which the following amounts have been found in the substances named. Oat flakes, 0.2 mgm.; commercial oat flakes, 0.04 mgm.; grape juice, trace; apple juice, trace; apple-juice concentrate, 0.1 mgm.; wholemeal bread, 0.3 mgm.; wholemeal rye bread, 0.1 mgm.; hazel nuts, 0.1 mgm.; in 100 gms. in each case. The drinking water examined gave 0.046 mgm. per litre; human urine 0.1 mgm. in the daily output; human fæces, 0.1 mgm. *per diem.*; human blood, up to 0.3 mgm. per 100 gms.; ox liver, 0.2 mgm. per kilo; ox brain, 1.4 mgm. per 100 gms.; a surprisingly large amount.—R. Berg. (*Biochem. Zeit.*, 1928, 198, 424; through *Brit. Chem. Abstr., A.*, 1928, 1271).

Formation of Dental Tartar.

Both supra- and subgingival calculi appear to be chiefly formed by the action of certain micro-organisms, particularly *Actinomyces* and *Leptothrix*, which through their growth bring about certain biochemical processes leading to a precipitation of lime salts. In supragingival formation of concretion the lime is precipitated from the saliva; in subgingival concretions, from the serum or exudate. In both cases the precipitated calcium salts are bound up and fixed by the firm vegetation formed by these organisms on the surface of the teeth; as the desposit of lime proceeds, the mass constantly assimilates new vegetations which thus come to constitute a considerable portion of the organic stroma of the tartar. Contributory causes of tartar formation are the normal condensation of colloids in the saliva, with escape of carbon dioxide, and in subgingival cases the occurrence of an exudate from which lime may be precipitated, with subsequent incrustation of the dead organic matter at the roots of the teeth.—C. Narslund (*Acta Path. Microbiol. Scand.*, 3, 637; through *Chem. Abstr.*, 1928, 22, 985).

Objection to "Offals."

There is a growing prejudice against the use of the word "offals" when applied to cereals after the miller has done with them. It is an old-fashioned term, which is thought to apply appropriately to refuse, but not to material which is of prime importance as a feeding stuff.

Millers themselves object to the term not the least of all. They are desirous of finding a substitute, and the National Association of British and Irish Millers are offering £25 for the best overriding name for wheat "offals." They also offer another prize of £25 for a fresh name for fine "offals," which are at present known as "sharps," "middlings," and "thirds," according to differing localities. The invention or adaptation of some word which shall designate the material with greater definiteness, and certainly more euphony, is, therefore, being sought.

CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

"Milk Fever and the Nervous Forms of Distemper and Hysteria in Dogs."

To the Editor of The Veterinary Record.

Sir,—Most practitioners will agree with every comment made by Mr. Oscar Stinson in your issue of April 6th, as it is a well-known fact that milk fever is met with in cattle before the third calving, although of course the vast majority of cases occur either at or after it.

No one will dispute the fact that the condition is rare in heifers and at second calvings, but in the course of a year's run of cases, one or more will often be encountered. I had two in heifers last year, and have had the attack as long as six months after calving—this, of course, must be regarded as exceptional. It must also be remembered that the condition can precede calving, or be in conjunction with it. I quite agree with both Major Chambers and Mr. Stinson as to the advisability of intense inflation of the udder. Some herdsmen dislike it being done, as they allege that the milk yield is interfered with and that the yield is not so great afterwards. This is more likely to be observed when frequent inflations are necessary, *i.e.*, when relapses necessitating them occur. I have not observed any diminution in the yield after one inflation, but I have done so in cases that have had to be inflated more than twice at the "one calving."

The discussion on hysteria has so far not carried us much further, and, in the light of our present knowledge, it is manifestly absurd to suggest that it may be due to an ultra-microscopic virus. The great majority of cases of true hysteria (which have no connection with distemper) often follow the feeding of some of the various hound meals and dog biscuits of questionable value and content with which the market is flooded, and which are extensively advertised. The symptoms disappear when this feeding is discontinued, and very often no other treatment is required. In view of the ease with which the great majority of cases are treated, if the condition is due to an organism of any description then that organism must be one of the most vulnerable known in the annals of Bacteriology. Large doses of bromide have been recommended, and small doses of chloretone condemned. Personally, I am not in favour of excessive doses of bromide, and if bromide is to be used for any length of time, it is advisable to use a preparation like that prepared by Savory and Moore, and sold under the name of "Fructole Bromide." With this preparation, there is little or no risk of bromism, and if desired small doses of liq. arsenicalis can be used in conjunction. For ordinary hysteria, the treatment advised by Major Kirk is the best. Luminal sodium, in the form of an elixir, can also be continued with later, if desired.

The paper under discussion is without doubt an excellent one, but the chief fault appears to be to connect three diseases which have nothing in common, at any rate from the etiological standpoint.—Yours faithfully,

1 St. Cross Road, J. F. D. Tutt, M.R.C.V.S.
Winchester.

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To the Editor of The Veterinary Record.

Sir,—After perusing your correspondence column of April 6th, it appears to me that Mr. L. P. Pugh has been caused some degree of worry or uneasiness by certain remarks made by me at a recent meeting of the Central Veterinary Society. He says that I have rather taken him to task, without mentioning his name. Now, as I did not mention his or any other name—the remarks being given in a general sense—it looks to me as if he had taken upon himself the burden of my statements. An old proverb says that "confession is good for the soul." According to some authorities, the soul is represented by the conscience. There is also an old French proverb which says "*Qui s'excuse s'accuse.*" Mr. Pugh need have no misgivings. I do not consider that the epidemic which he described was caused by a trypanosome. My remarks did not need any interposition, interpretation, or correction by Dr. Hare.

Sleeping or sleepy sickness is a common or vulgar term which may be used to indicate trypanosomiasis or encephalitis lethargica. The former in England can be ruled out on incidence. In encephalitis lethargica a sleepy, sleeping, or comatose state is one of the common clinical symptoms. Occasionally it is the only symptom. Pathological findings in encephalitis lethargica are few. The common lesion found is a perivascular infiltration particularly associated with the central nervous system. The disease must of necessity be diagnosed from the clinical picture, for perivascular infiltrations of a similar nature are associated with many of the so-called virus diseases. This being so, the findings, by medical pathologists, of lesions identical with those of encephalitis lethargica most probably only signified that the animals had suffered from some disease produced by a virus. Now what common disease of dogs comes into this category? Distemper.

Messrs. Dunkin and Laidlaw have recently demonstrated that distemper is the result of a virus infection. Histological examinations have shown that perivascular infiltrations or the so-called cuffing are present in distemper. Now, in the so-called nervous type of distemper Mr. Pugh's train of symptoms is often observed, and his classification is quite a useful one to take in a description of this variety of the disease. To my mind, Mr. Pugh's cases were nothing more nor less than cases of distemper, and I will grant that, although the deductions were, in my opinion, wrong, his clinical description was good. It is strange that Mr. Spicer did not see any cases which he could call sleeping or sleepy sickness in dogs, although he was only ten miles from Mr. Pugh. Sleeping, or sleepy, sickness is not generally so endemic. The dogs which came at that time under Mr. Spicer's supervision were probably old-fashioned and only had distemper. They did not keep up with the march of modern medical reasoning. To my mind, criticism is justifiable under all conditions so long as it is fair. If we all thought alike there would be no progression. Even the Deity is criticised; an enthusiast in his work hopes for it and welcomes it.—Yours faithfully,

Royal Veterinary College, J. McCunn.
Camden Town, N.

Delivery in Lateral Flexion of the Neck.

To the Editor of The Veterinary Record.

Sir,—I notice in the issue of the *Veterinary Record* of March 30th an extract from a French journal giving a method of facilitating delivery in a case of dystokia in a cow where there is lateral flexion of the neck of the calf.

May I detail a simpler method that will bring the head of the calf within reach. An ordinary calving rope is taken and one end is introduced and passed forward round that part of the base of the neck which is pressed against the calf's shoulder, which is always within reach. After this is accomplished, the hand is passed forward on the outside of the neck, the end of the rope grasped and brought outside to meet the other free end and threaded through the loop in the ordinary way.

Traction is then exerted intermittently, first pulling and then slacking—this is the important point in the procedure. Owing to the calf's neck being broader at the base than where it joins the head, the rope will gradually slip along the neck towards the head, and this can be facilitated by pushing it along with the hand as it gradually passes towards the head. Care must be taken that the rope does not bind too tightly on the neck. The intermittent pulling will gradually bring the head within reach of the hand.—I am, yours faithfully,

c/o Glyn, Mills & Co., William S. Stevens.
3 Whitehall Place,
London, S.W.1.

The Editor acknowledges the receipt of the following:

Communications from Messrs. John Cameron (Berwick-on-Tweed), W. A. Campbell (Boroughbridge), W. Robb (Glasgow), A. Spicer (Oxted) and A. W. Stableforth (London).

Report of a meeting of the Southern Counties Division, N.V.M.A., from Mr. J. Facer, Hon. Secretary.